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The Nature of the Modern University

By ERNEST CADMAN COLWELL

The following address was delivered by President Colwell of the University of Chicago at the meeting of the Southern Universities Conference held in Atlanta on April 14-15, 1948. Because of its relevance to the problems which Emory is now facing, it was repeated by special request at a called meeting of the Emory University Faculty on Friday, April 23.

"THE BEGINNING OF WISDOM," said Socrates, "is the definition of words." I use the word *university* today to mean an institution whose primary and distinctive function is the increase of knowledge. A university is an institution that increases knowledge, not for its own students, nor for its own faculty alone, but for scholars and scientists the world around.

In its devotion to the increase of knowledge, the university is distinguished from the college, whose primary task is teaching, and from the technical, vocational, or professional school, whose primary task is training. The primary task of the university is research. Research is that type of investigation which results in increased knowledge.

We all know that the university also has an important teaching

function; we all know that some research enriches college teaching. But we know equally well that when we describe a university as a university we are describing a research institution. It is this institution that I plan to discuss with you today—passing over the college and technical and vocational school (as Cicero would say) without mentioning them.

I have limited my subject thus narrowly with a clear conscience and for two reasons. The first reason is my own limitation: I know very little about colleges; I know less about technical schools; I know nothing about vocational schools. The second reason is the nature of this audience. College presidents are impervious to attack by shotgun speeches—not that they are armored like the rhinoceros with a tough skin but because they have wielded the weapon so often themselves. Moreover, the current development of research interests and programs in Southern institutions justifies my speaking to a Southern university audience about the nature and limitations of that research institution which we call a university. The new life and vigor which characterize economic life in the South today are manifest also in the educational world in the surge of interest in research on Southern campuses.

Let me start again by repeating my first statement: A university increases the knowledge of all the scholars and scientists who work in a particular field. Incidentally a university educates some students to do research. The university does this by admitting qualified students to study with the faculty, and gradually reduces their supervision until they know no other control than the criticism of their work in reviews and the testing of their results by those who work elsewhere. The education of graduate students is effective when the relationship between teacher and student is an intimate one.

It follows that universities cannot be rapidly multiplied in number, nor can their output of graduates be *rapidly* increased—except as quality is lost. Quantitative increase in university work is a matter of slow growth. It must follow, then, as the night the day, that the G.I.'s in the universities (though not necessarily those in the colleges) will be short-changed, and that the quality of university instruction in this country will be debased beginning next autumn.

In most of our colleges and universities, the first two years of work are general in nature and introductory in level. The bulk of the G.I. enrollment has been taken care of in these two years by a concertina-like expansion of faculty. Recent graduates and graduate students have plugged the gaps. One G.I. friend of mine, now a student, told me last week that three of his four teachers graduated last year.

Next autumn the peak of the G.I. flood reaches the third year. At this point specialization begins. The student "majors" in a department, or starts the specialized study of a professional curriculum. This faculty cannot be rapidly expanded, for its members must be experienced in investigation to be effective teachers. In one Midwestern university there are now three thousand pre-engineering students. In that university the school of engineering will accommodate less than a thousand students. Its administration has no magic lamp to rub to produce the faculty to teach the expanded student body it faces.

There are not many universities that meet my definition in this country at the present moment. Ten to twelve would certainly be a generous estimate. And there are not enough scientists and scholars to staff those that now exist. The universities take scholars from each other and from foreign universities. We have recently lost professors to Canada and Edinburgh. We lured a professor of Celtic from the University of Wisconsin and within two years lost him to Edinburgh. Wisconsin has not replaced him, nor have we.

Let me illustrate the rigidity of supply in the matter of university faculty from a field I know well. For many years—now past—I studied the Greek manuscripts of the New Testament, and worked with a few others in a field called "textual criticism." During the generation in which I labored in this field, only two young Americans have qualified themselves to carry on scholarly investigation in this field. If the students in this field should miraculously increase in the next six months, no one could increase the size of the faculty qualified to teach them. Given ten years, the universities could do something about it.

This example is a somewhat ludicrous one, but you all can trans-

late it into subject areas that you know better than I do where the rigidity of the supply of faculty is almost as great.

The roll call of the faculty of any department in a university is never limited by regional lines and seldom by national lines. I know a department of astronomy whose observatories are directed by a Hollander named Kuiper, whose chairman is a Russian named Struve, whose secretary is a Canadian named Hiltner, whose staff includes a German student of molecular physics named Herzberg, an Indian theoretical astrophysicist named Subrahmanian Chandrasekhar, a Belgian observer named Swings, a Scandinavian whose name I cannot pronounce, and two Americans named Greenstein and Morgan.

The competition for a university faculty cannot be limited to a state or region. In terms of source of faculty, there cannot be a Southern university, nor a Midwestern university, nor a New England university, nor an American university. Mr. Hutchins has called our attention to the role of Hitler and Mussolini as benefactors of American universities. Scores of scholars and scientists joined our faculties as a result of the activities of those two infamous characters.

The South can and should support several universities. But these universities should be universities of national and world distinction. It is a contradiction in terms to speak of a Southern university as though it would be nourished by Southern scholars alone, or as though it would serve the South alone. To enter upon the development of research institutions in the South as though this would set up a protective frontier around your own scholars or graduates is to misconceive the nature of a university and of the university world.

In what I have said so far I have concentrated your attention upon the faculty. This was intentional, for the faculty is more important than the students in a university. The shopworn phrase, "a university is a community of scholars," is true of a university as it is not true of a college. The faculty's own studies are the fruit of the university's work. The university faculty teaches by studying with students. Before university teaching can begin, the university must have a faculty that studies. In fact, a university *is* a faculty

that studies. Since the supply of studying professors is far below the demand, all universities import and export.

When I was a student in Atlanta, the Georgia Power Company displayed a poster in the streetcars headed "The Empire State," showing a map of the state surrounded by a wall, and carrying this jingoistic claim: "If a wall were built around Georgia, the state could be self-sustaining." This was followed by statistics on crops and natural resources. I know little about crops and natural resources, but I know that if a wall were built about Georgia, it could not have a university. If a wall were built about the South, it could not have a university. In the world of universities, the South of tomorrow should be content with nothing less than institutions of national and international caliber. It can have them if it is willing to develop new patterns of cooperation. In this it is already ahead of the rest of the nation, but the costs of the modern university in money as well as in men require much more stringent self-discipline on the part of individual institutions for the development of research in this area.

The costs of research, particularly in the natural and social sciences, are increasing in a geometrical progression. In 1905, Leland Stanford university was the richest institution in America with an endowment of fifteen million dollars. Today the university which I know best is spending that much money in a single year on its research. A single research institute has cost two and a half million for equipment, costs more than a million a year to operate, and needs two million dollars for a laboratory building. By contrast, our college with 2750 students costs less than a million a year in direct expenses.

As educators we tend to solve all problems by inflation and expansion. I recently visited a university in the mountain states. Its president proudly informed me that several new schools, including a medical school, had been launched within two years' time. "If they can have them in *blank,*" he said (mentioning a neighboring state), "we can have them here." His state has neither the population nor the taxable resources to establish and maintain those schools. In cooperation with several of his neighbor states, he could have estab-

lished and maintained schools of the highest quality. The boundaries of the forty-eight states were not established where they are with research institutions in mind. If we were not in this business ourselves, we would be less ready to solve all educational problems with the word "more." As citizens we must find it hard to justify the wasteful and diluting duplication of research institutions of all kinds.

Not every university needs all of everything. Bigger does not necessarily mean better here. A bigger telescope is better than a smaller one. But several universities can use one telescope. The University of Texas built a telescope. Several Midwestern universities provide the astronomers who look through the telescope in Texas. Texas is spared the almost impossible and very expensive task of finding a good astronomy department overnight, and the Midwestern universities are spared the expense of building a telescope. Not every university needs a telescope.

The outstanding example of how not to develop a university is provided by the current rash of "area studies." Everyone is aware of our need to know more about Latin America, about Russia, and about the Far East. Every university, therefore, that claims the name is feverishly developing studies of these regions. If the individual university does not launch itself into this vasty deep, a beneficent foundation is eager to give large sums of money to this cause. Since the number of teachers qualified to study these subjects is limited, the only results have been the relocation of area specialists on new campuses and an increase of at least fifty per cent in their salary level.

Let's take an example from the world of physical sciences. Not every university needs a giant cyclotron. These multi-million-dollar gadgets should serve more than one university, but their popularity has reached such a level that it is hardly possible to build even a hospital today without including a cyclotron.

It is time that we in the colleges and universities began to tell the public the truth about our libraries. I owe to Professor Stipe the observation that libraries are like cemeteries in that they always need more space. He has gloomily predicted that in time the surface of the United States will be about equally divided between

cemeteries and libraries. There is no virtue in building the size of a college library above a hundred thousand volumes, and fifty thousand may be too many. College libraries grow for two reasons: advertising value of bigness (the increase in the number of volumes each year can be pointed to by the president as evidence that the college is vigorous and growing under his administration), and the laziness of faculty and librarians in weeding out unused and useless material. The university's library, on the other hand, has grown through a false conception of the nature of a university library. That error is the assumption that a university library should contain every book that any member of the faculty may want. This ideal has never been realized and never can be realized. Even at Harvard, professors borrow books from other libraries. What has been realized as a result of this ideal, is the waste of millions of dollars of money that could have been spent for the advancement of knowledge. We cannot justify, nor can our culture afford, the sums currently wasted in research library maintenance and building. All these increased costs argue for the efficiency and economy that come through institutional cooperation.

I venture to suggest three ways in which universities could cooperate so as to increase resources and save money. In the first place, universities should work out plans for the migration of graduate students which would not penalize the student. It is cheaper and often educationally more profitable to move students rather than professors. Nothing except inertia and a narrow institutionalism keeps the graduate student today from taking part of his work at one institution and part at another. Where it is now done, it is almost always done at extra cost in either money or time to the student. The present student exchanges penalize the student. This need not be true in the future.

In the second place, area studies should be correlated without any further relocation of the few available research teachers. This could be done by the employment of top-flight administrative officers in each university with this as their major responsibility. They could advise students and send them on their way from one institution to another. They could advise faculty and administration as

to open areas that should be developed. They could work out the treaties between institutions that would make this possible.

In the third place, we should have in each of three or four sections of the country a regional research library. Let me illustrate by describing a plan now being worked out under the leadership of Mr. McDiarmid of the University of Minnesota.

With the assistance of the Carnegie Corporation, he is planning a regional research library. This library can be the servant of the research libraries in the region. It can house for them the little-used volumes that now clutter their shelves and make them inefficient. It can house the one-copy-only file of periodicals and government papers. It can provide bibliographical services of various sorts to the member libraries—and can deliver any volume it contains overnight to any member library. Each of three to five regions of the country should have such a regional research library.

This is no impossible dream. The university librarians of this generation have the open-mindedness, the imagination, and the statesman-like qualities to bring it to pass. In our discussions in the Middle West, it soon became clear that the university librarians see greater opportunities for effective cooperation than the university presidents do.

Many of these services will develop slowly, but the mere existence of a regional research library will solve major problems for the individual university. With it in reserve, a university can set the size of its library both in building and in number of volumes for an indefinite period in the future. The ordinary American university library would then house those books currently in use for teaching and research. The on-campus library would thus become the working library of the university, a library with a definite ceiling on the number of volumes it contained but capable of enormous expansion through the facilities of the regional library. The present pattern of twenty libraries housing twenty copies of formerly useful books at the high maintenance cost required for books currently in demand would be changed. In the new pattern, the regional library would house one copy only of these obsolete works at a low cost per volume. All large university libraries are loaded with useless books:

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accumulations of duplicates from the last generation's required reading lists, volumes of sermons by preachers more distinguished for piety than for homiletical ability, biographies of individuals whose careers scarcely separate them from the vegetable kingdom —these and similar trivial effluvia of the printing press make up more than sixty per cent of the volumes in our college and university libraries. With a regional library the universities can escape from the dominance of this trash, and increase efficiency at the same time that they enlarge the research resources of the individual university.

Society puts some pressure on us to cooperate in vocational and professional education. It is significant that the greatest advances have been achieved in teacher education. For example, when in 1942 western North Carolina needed some teacher education nearer home than Durham, the University of North Carolina transported faculty to two institutions in that part of the state for the purpose. And when last I heard of this, it had avoided the unnecessary duplication of institutions for this purpose. Social pressure has done something, perhaps less effectively, in regard to medical education. But if effective cooperation is to be developed in research, the universities themselves must create the pressure and the resultant cooperation.

This cooperation should be inclusive. Public and private institutions should plan their future together in the fields of research. We are not as a people rich enough in either brains or money to support a double set of universities. Whatever the grounds may be for urging two complete sets of universities, the hard facts are that we do not have the resources in brains or money to justify such wasteful and ridiculous excess. You do not have it in the South, we do not have it in the Middle West, nor do New England's venerable resources reach to that extreme. The president of the University of Illinois—no mean developer of his own institution—has recently discussed the need of a committee to plan higher education for his state so as to include public and private colleges and universities, teachers colleges, and junior colleges.

Where universities are now developing research plans or even

beginning new ones, the opportunity exists to escape the faults of older programs. You in the South need not copy all the mistakes made by Northern and Western universities. The temptation is to achieve status and prestige rapidly by complete conformity to established university patterns. Shun this temptation as you would the devil. Your youth in the world of research gives you an opportunity to profit from our mistakes.

Let me modestly suggest some rules for avoiding current university mistakes.

(1) Insist on research that will increase knowledge rather than information alone. There is much of the latter.

A young professor of art was overjoyed to find in an attic a file of a century-old magazine every issue of which contained a discussion of a work of art. He regarded this as a wonderful source for research, for not only had the works of art vanished in the meantime but the very names of the artists were unknown!

A distinguished biologist on our faculty said that judging from what the biologists were publishing their creed must be:

every fact deserves observation;
every observation deserves recording;
every record deserves publication.

(2) Be slow to publish or to establish publications, especially learned journals.

(3) Sprinkle your faculty of research workers with creative artists; they cannot tolerate piddling work.

(4) Force the foundations and industries to support the research institution rather than the project.

(5) Draft a reasonable appeal for liaison and cooperation with the older research institutions, and sell it to some foundation. We were able to secure foundation money for cooperation with a German university; we were unable to secure foundation money for cooperation with a Southern university.

(6) Never do alone what you can do better in cooperation with

one or more other institutions. Particularly is this pertinent in the field of library resources, publication, and area studies.

(7) Never fail to stand alone on a question of quality in research or significant experimentation however unpopular. And may God help you in this Southland to build more than one university to which the nations of the world will turn for enlightenment.

At Concord

By CHARLES R. HART

Here were the homes of our first men of thought;
This is the tranquil village that they loved,
But little changed, except that elms are taller,
And oaks and ashes have a broader girth.
The country still is near to every door.
You go to Walden, as men used to go,
Through wood and field; the red-winged blackbirds call
Where swiftly flows the smooth Musketaquid.

Here is the place, but where is now the soul,
That soul that was the spirit of the land?
Did it waste like the cabin by the pond?
Does a cairn mark where both could once be found?
It lives in books, but that is not to die;
It lives in books, and therefore lives in men.

Wanted: A Pattern for Education

By J. Harris Purks, Jr.

Alumni of "the great Class of 1923" delivered addresses at the two graduation exercises in June 1948. President Colwell spoke on Friday evening, June 4, and Dean Purks on Saturday evening, June 5. Dean Purks, long noted as an exponent of the overall problems of education, is now on leave from Emory serving as Director of the University Center in Georgia.

Mr. president, ladies and gentlemen, and, in particular, ladies and gentlemen of the graduating classes. Today you receive degrees or certificates from a highly respected institution which is a part of a very complicated national pattern of educational structure. You have been working within limited areas of this pattern in accordance with your own personal choices. But the entire pattern or system is very important to you. For you now join those who make the educational system possible, whether by influence, by participation, by the exercise of the obligations of citizenship, or by philanthropy.

You enter upon this responsibility at a time when the entire system groans under the weight of commitments thrust upon it from without and fancied from within. Its complexity appears to have crossed the boundaries of the domain in which efficient operation is possible, and to have expanded into a realm wherein the law of diminishing returns takes its toll at each extension. Yet the costumes which you wear on this occasion are symbols denoting a continuing tradition which began in days of lesser complexity, and which throughout centuries of thought has borne the fruits of civilization.

As a people we have a simple childlike faith in the efficacy of education. We really do not know what it is in which we thus confidently place our faith. Education is a nine-letter word beginning with *e* and ending with *n*. Instinctively we feel that we cannot get along without it, that we shall get along better with it. We assume

that some vague and mysterious "they" knows what it is. We usually associate this "they" with the formal educational system and with those who hold positions within it.

Yet those of us who are associated with the system have not reached an agreement as to what education is, or should be. Each profession or trade or skill or art or school or division or discipline, rightly sensing the values which may accrue from its limited area of activity, tends to make pin-point definitions and descriptions, and to recommend pin-point intensifications. Furthermore as new discoveries, new skills, new services, new would-be professions, and even new disciplines evolve in the ever-changing mosaic of human achievement and progress, a malignancy of subdivision and subsequent growth adds to the scores of tongues calling for recognition. Occasionally someone will come forth with a definition of purpose which, though admirable and possibly correct, has forfeited precision for the sake of generalization. Each definition, microscopic or macroscopic or blurred into complete generality, attracts its following; each attracts support, but rarely enough support.

Not everything that is proposed in the name of education is good. It is past time for us to develop a maturity of judgment in such matters. It is to this task of evaluation that your attention is directed today.

No speaker should misappropriate the honor of the use of this sounding board by a claim of infallibility of judgment. Rather should he submit those propositions in which his belief is firm, by which he is willing to stand without arrogance or to fall without shame, in the hope that you will apply to them the straightedge of your own judgment, and in the best tradition of a developing discipline assist in the movement toward the establishment of truth.

The first proposition is this: Educational institutions were established in order to facilitate and to encourage contacts between teachers and students and their disciplines.

Remarks on the function of disciplines, teacher, and student can be appropriately introduced by a context translation of Chaucer's description of the scholar:

Of study took he most care and most heed,
Not a word spoke he other than was need,
And that was said in form and reverence,
And short and quick, and full of deep good sense,
In accord with moral virtue was his speech,
And gladly would he learn, and gladly teach.

When educational institutions were formed, the scholar no longer had to move about to find students and other scholars. No longer was it necessary for him, as a peripatetic, to sleep under the stars with his books for a pillow. But his essential scholarly habits remained: learning, teaching, restraint.

A discipline, in an academic sense, is a branch of knowledge, whether of truth or theory or hypothesis or convention. A discipline therefore has established aspects and developing aspects. Those aspects which are established as truth are so defined because of proofs or observations which, having stood the tests of criticism and appraisal throughout the years, are now uniformly accepted within a continuing disciplinary forum. An example of an assumed established aspect of physics is the inverse square law of universal gravitation. Other aspects may be theories which, though not accepted as perfect truth, are uniformly accepted as near approaches to truth. An example of such was the Bohr Theory of the Hydrogen Atom. It is still taught as a theory and as one of the sign posts along the rugged road toward truth. But many refinements and modifications have been made.

Then there are matters of convention. It is not correct to say "between you and I." Good usage, acceptable in the discipline of the mother tongue, would require "between you and me." In disciplines of convention there are always tolerances, whether they make sense or not. For example, if everyone should begin to use "between you and I," we should have to admit, in time, that convention had changed; and the discipline of the mother tongue would have to be altered accordingly. But it is important that these tolerances be confined within rather narrow limits, for when the discipline of language falls apart, precision of communication becomes impossible.

The discipline of mathematics perhaps embraces the widest coverage of established aspects and is subject to the least of tolerances. Yet it too is in a continuous state of development in the sense that new concepts, new ideas, and new proofs emerge. Mathematics, like language, is one of the basic disciplines. It is basic in the sense that the physical sciences are built around its gross anatomical structure; it is basic in the sense that the biological and social sciences anchor to it when they reach maturity; it is basic in the sense that, whatever may be the other characteristics of this world, it is most certainly a world of number and of geometric form; it is basic in the sense that it is logical. Oddly, this very relevant discipline is most neglected in the structure of American education.

The concept of a developing discipline implies the existence of a functioning disciplinary forum to which scholars subject their ideas for criticism and appraisal, for the operation of discipline as a process.

Lexicographers list discipline as a synonym for education itself.

The teacher will teach as truth that which he has learned of the established aspects of his discipline; he will teach as tentative propositions those things which are accepted as such within his discipline; he will submit evidence in support of those things which he believes about matters still in process of debate within the forum of his discipline.

The line which separates the teacher from the undisciplined propagandist is unmistakable. The propagandist teaches his beliefs as truth—and does not like rebuttal from student or colleague or layman.

There is a feeling among many in the discipline of physics that if a sensational new development is reported in the headlines before it appears in established journals of physics, or before its protagonist has submitted it to a conference of his peers, the odds point to the probability that it may be written off. This suspicion is commended to you in your evaluation of pronouncements, whether they relate to the latest hypothesis in theoretical physics, to the debatable aspects of political science or economics, or to remarks on the educational philosophy of commencement speakers.

Academic freedom is distinguished from personal freedom in the sense that the scholar is subject to the standards of his discipline and to the judgment of his peers. And if the peers do not exercise the responsibilities of judgment, the discipline which might justify the claim of such freedom does not exist.

The student is a scholar who is a bit out of phase with his teacher. He is in the process of learning established aspects. As his mastery of these increases he can participate ever more intelligently in the forum of his discipline. When his mastery and his participation become comparable with those of his teacher, he is entitled to be honored as a peer. Thus a potential teacher is born. Whatever other competencies of personality, appearance, and persuasion a teacher may need, the irreducible minima are established in this manner.

Those of us who have supported the system have left the existence of intra-academic disciplinary provisions to chance. We have required long hours of didactic practice of our teachers; we have chided them for answers which may be used before the setting of the sun; we have needled them for justification of their institutions on a basis of immediate practicality; we have permitted them to divide and to subdivide the curriculum, and have encouraged them to accept every responsibility which a whimsical society would transfer to them. We have not realized that disciplined thought is very hard work; we have assumed that it can be sandwiched between classes or cultivated near midnight after a long evening of grading papers.

The second proposition is this: The formal educational system should not attempt to teach everything. If our faith in the efficacy of education leads us to the assumption that the educational system should be the source of every answer, whether of skill or of art or of economy, of personal or professional practice, we tend to become victims of a structural authoritarianism which may progressively stifle initiative, self-reliance, and individual responsibility.

Any profession or service or industry or would-be profession can, and if it profits selectively should, assume its appropriate share of responsibility—financial, and instructional, and administrative—for

training in the currently-operating techniques appertaining thereto.

Yet the educational system is so involved in formalized apprenticeships, in direct-service projects, and in training in techniques that its financial and academic solvency is in doubt.

We hear much about the high costs of education. Please, throughout the years to come, assess how much of this cost arises from these marginal activities of the system and from the attendant complexities of management—and how much goes into basic educational purposes.

Imagine a delivery boy's dressed-up motorcycle, with rabbit foot and fox fur pendants, a three-tone horn and a siren, direction indicating taillights, built-in walkie-talkie, and alligator skin mudguards —but with a depleted gas supply and a motor which is beginning to skip. Then think of your national pattern of formal educational structure—for it is yours.

We must face the fact that the educational system cannot deliver every service which a service-seeking society wants. The educational system is no sprawling Santa Claus which can assume the responsibilities which should be borne by home and parents, by the neighborhood and community, by professions and would-be professions, and by industry and business.

We hear much about shortage of personnel. Could it be that for over a quarter-century we have sold short the basic disciplines and their honored habits of internal self-criticism; that we have invested in techniques and marginal activities; that we are now caught short of potential in a fast-moving age? Could it be that instead of facing up to the facts of the situation we continue to throw good money after bad in ill-advised attempts to build at the top and at the sides rather than upon a foundation?

To be more specific: if the eleven-year public school system in your home city is short of books, money, buildings, equipment, and teachers; if its graduates cannot spell correctly or read with comprehension or write with clarity; if they know the disciplines of arithmetic, algebra, and geometry only by name; if they have no perspective of their place in the continuing stream of history; if they are long on experiences in reacting to stimuli, and short on

habits of thinking—then the addition of a twelfth grade may prove to be the compounding of mediocrity. It may even be quite dangerous. If so, we certainly cannot blame the kids. The public school system in your city undoubtedly needs more money. But most likely it does not yet need a twelfth grade.

In attempts to make our educational system practical we have injected into the curriculum too many rules of thumb whereby, without background, the student can go through the motions used in ephemeral techniques and practices. Such education, if indeed it be such, is essentially terminal in character. For from it one does not go forward; he can merely go to right or to left. In attempts to make our school system "free" we have failed to honor restraint, criticism, and appraisal. In attempts to make education easy we have attenuated the curriculum. Yet we sometimes wonder why so long a time and so much expense are required for a person to become "educated" for a "learned profession."

This twentieth-century civilization continually requires more and more education. Thus we can ill afford the time required for mastery of techniques and practices which, though defined as practical in a transitory frame of reference, may soon be out of date. The trend in the twentieth century is toward an ever-increasing number of hours per week available for activities other than those relating to livelihood. We can ill afford to extend the overall time required for the attainment of a given educational level just because we choose to use fewer and fewer of the available hours per week for the purpose.

The third proposition is this: One of the most urgent problems facing the nation today is the creation and maintenance of a functioning mosaic of education and of training which can cover genuine needs at a level of quality.

We should be indeed fortunate as a nation if the problem were so simple that it might be solved by merely doubling or trebling the amount of money that we put into the system of public and private schools and colleges. More money will be needed—undoubtedly; and we might as well face it. Teachers have long been underprivileged economically, and the past decade has seen no significant

change in their relative status. Yet when we look at the habits of the educational system, we must question whether doubling our support would help the teacher or hurt him. For the system too often takes on at least a dollar's expense in new commitments for each dollar of increased support. The system, and those of us who support it, have not in general seen fit to look at both sides of the ledger. There is small virtue in adding more if indeed we are spreading it thinner. Cities and states and philanthropy would be doing society and the educational system a great intelligent service if most of the increased support which must come during the next decade were bound by the condition that not one additional course be offered, not one new academic or training division be formed, not one new grade be added, not one new direct service or marginal project launched; but with the positive directive that the system or institution consolidate into quality performance the commitments already outstanding.

It would appear that elementary considerations would lead us to the conclusion that we have only three years to prepare for the surge of registration in the primary grades which will result from the increase in birth rate at the end of the war. But we want progress. So we take on new commitments—and leave the problem of what to do with the beginners until the wave slaps us in the face in 1951.

It would appear that the unbelievable costs of research and development in the applied sciences, as contrasted with those in the basic sciences, would at least lead us to the suspicion that lack of background on the part of the researcher may be a significant factor. Yet the educational system cuts the feet out from under the preparation of future researchers by neglecting basic, fundamental disciplines, from the primary grades through the colleges. Lack of attention to fundamentals is not only poor educational practice; it is poor business practice.

After these remarks it is certainly required that something positive be submitted to you for criticism and appraisal.

First: It is suggested that responsibility for the mosaic of education and training be defined as distributed among home and parents,

neighborhood and community, church and welfare organizations, business and industry, the professions and guilds, the press and radio, and finally the formal system of educational institutions. Thus under this suggestion, the neighborhood and community would not discharge its obligations by forming a pressure group which successfully adds a few dollars to the school appropriation and then transfers the responsibility to the school. Admittedly there might be less bridge and golf played in the neighborhood—but there might also be less juvenile delinquency and more real homes.

Second: It is suggested that responsibility for training in techniques be left to those who can perform this service best. Thus, the training of shoppers' guides would be left to the merchants; the training of restaurant operators to associations of restaurant owners; the training of insurance salesmen to the insurance companies; the training of typesetters to the newspapers; and so on.

Furthermore a profession, like medicine, which is a body of men favored by a quasi-corporate status subject to a charter of ethics, should assume responsibilities commensurate with its prestige and control. Nearly forty years ago the *Flexner Report* helped set the pattern of medical education. No doubt it did a lot of good. For it raised the quality of medical education at a time when, without this quality, society would have been subject to unskilled use of powerful radiations and drugs which, emerging mostly from basic science, have contributed so much to the surprising increase in life expectancy.

Reputable institutions saved the profession at a critical period in its history. Perhaps the profession can now help save sixty of the best universities in the nation. No profession is more indebted to the scholarly tradition. No profession is more indebted to basic, pure science. No profession would fall quicker without such support. No profession could more appropriately help save and support not only medical education, but the entire tradition of learning. Perhaps it is about time for another report of the Flexner type.

Third: It is suggested that the formal educational system recognize that its primary responsibility is to place the heritage of basic skills, basic knowledge, and of considered evaluation of things

artistic, cultural, historical, and religious in the hands and hearts and minds of men and women where its statistical safety will be high.

There can be overproduction of petroleum engineers, and personnel administrators, and physicists, and herpetologists, and shoppers' guides, and even of holders of certificates to teach. But there can be no overproduction of men and women in whose disciplined hands and minds and hearts the precious heritage of the race is held in reverent custody, whether merely for purposes of safety, or of use, or of enhancement, or of personal satisfaction.

Fourth: It is suggested that within relatively easy access to every person there be adequate provision, on a formal educational basis, for those fundamental aspects of education which are not subject to overproduction.

Fifth: It is suggested that those aspects of education and of training which are subject to overproduction—that is to say, any and all education for specific breadwinning purposes—be subject to a study of justification on a basis of genuine need, and on a basis of supply and demand.

If there is a school for the training of professional ichthyologists in Louisiana, our fair state does not have to hang her head in shame because such a school does not exist here. Perhaps our newly-authorized School of Veterinary Medicine, of which Louisiana has none, will meet the needs of both states. There is not even a medical school in the populous sovereign state of New Jersey. But New Jersey has doctors. Perhaps another illustration would be better. For we evidently need more schools of medicine—and it would be nice for the rich state of New Jersey to assume some of the expense.

Here in the South we have given considerable thought to the formation of a mosaic of higher education and training. Significant cooperation has been in effect for years before certain pressure groups moved in for the kill under the battle cry of so-called civil rights. We must nevertheless go forward with our plans for a design—a mosaic—of higher education which makes sense. Here in the South, where income is relatively low and where educational responsibilities are relatively high, we must make our dollars count.

We can solve our problems—and we must. We should cast a suspicious eye upon glib phrases and ill-considered advice coming from afar. We must look to ourselves and to those who join us in the glorious travail of disciplined thought and good works. Progress does not come by simply wanting it; it does not come without effort. There is no magic formula by which we can transfer our responsibility to some hypothetical Santa Claus.

In this century we must consolidate into a relatively stable culture the changes which have followed in the wake of the Industrial Revolution, the internal combustion engine, and the electrical age. The design and maintenance of the necessary educational system is essential to the task. This responsibility is commended to you for intelligent and affectionate response.

The next quarter-century will be interesting. I hope that it will not be tragic. Amid undisciplined pronouncements by pressure groups, amplified by press and radio, there are things to which we can anchor in the storm of confusion. May I suggest self-confidence, disciplined thought, good works, truth, and the precious discipline of resonance of all that is good and noble within you to the magnificent chord that was struck by Him who lived nearly two thousand years ago.

May your class, too, have a twenty-fifth reunion; may you too be present. May it be a happy occasion for you. But if it is not happy in a transitory sense, may you have the deeper satisfaction of knowing that you have run with considerable patience the race which has been set before you; that you fought a pretty good fight; that you have tried to keep the faith.

May I join you in a contest against Blind Chance to the end that you will have a twenty-fifth reunion, and that it will be reasonably happy. Let us as individuals lay our blue chips on the line. Blind Chance cannot stand this pressure; he cannot cover and call; he cannot even stay in the game.

Let's make a date for 1973—and let's make it a genuinely happy occasion. We might as well begin now. After all, this is commencement. And the contest can be a lot of fun.

Movies for Everyone or for the Few

By CHRISTINE SMITH

Christine Smith, A.B. (Centenary College) '26, M.A. '30, has been Movie Censor for the City of Atlanta since 1945. During her term of office she has previewed approximately a thousand films. Her observations of the quality of Hollywood's product and her conclusions as to legitimate hopes for its improvement are set forth in the following article.

THE SAYING, "movies are mass entertainment," has become a cliché, probably because of its obvious truth. There is no denying that movies, by and large, are produced and distributed to be seen by the many. Hollywood is mass production industry just as other big businesses. There is the same fear of trying something new, the same tendency to use the successful formula over and over again. It made money the first time it was filmed, why not again? As long as the public will pay money to see the hard-to-tell-apart features, just so long will the industry insist that movie makers are giving the public what it wants.

But at present there are vague signs and distant rumblings in the air. Box-office figures are down and give very little hope of going up to any appreciable extent. These facts are leading to some very interesting reading in the trade papers and some quite uncommon soul searching in Hollywood.

During the war any and every movie made money. There was, therefore, no disposition to give thought to improving the product or to experimentation. Everything was rosy, and there was even enough surplus money to indulge a few favored producers by letting them try their own ideas—occasionally and with modest budgets. But the prospect is not so rosy now, and there is much seeking after reasons for the drop in revenue.

As might be expected, there are those who, comfortingly, say that "there's nothing wrong with the box office that a few good pictures won't cure," and by their further observations indicate that by "good pictures" they mean more of the same. But here and there, especially among the reviewers and critics, one finds com-

ments to the contrary. As one critic pointed out in a New York paper, many of the best pictures of the current year compare favorably with the big box-office hits of years past but their monetary return is not as great. He goes on to suggest that, at long last, the public is wary and unwilling to waste time and money on movies. They have, according to this critic, been stung too often. They no longer believe the ads with their shopworn array of superlatives. They have lost confidence, lost the movie habit, and are prejudiced against the theatre. He suggests that the movie industry, especially the writers of the ads, adopt a policy of more truth and that they campaign to regain the confidence of the public, along with making better pictures with which to lure the discriminating.

Are there any signs that there are or will be any appreciable number of movies for the intelligent mature person? From the record, the answer is a timid "Yes." But it will take a bit of effort to find out which ones.

Of the nearly one thousand features shown in the last three years, most of them were boring, stupid, and infantile. The general pattern still prevalent in the movies is indicated by the fact that over 40% have to do with murder, one way or another. When any new theme is tried and found successful, there follows the inevitable copying of this idea until it, too, becomes hackneyed. For example, after the success of *The Lost Weekend,* there came the carbon-copy version with woman star instead of man. It is a safe guess that whatever type of picture makes a hit one time will be repeated by practically every other studio.

But there have been, in recent years, signs of trying the new, a willingness to take a chance on something different. *The Lost Weekend* was such a gamble. And, to the utter amazement of its producers, it became a financial success in addition to winning critical praise. The several movies dealing with the problem of anti-Semitism indicate that some producers will tackle themes of real meaning and timeliness.

The winners of Academy awards are not without significance. *The Best Years of Our Lives* took nine awards last year. It wasn't that great a picture. But it did have as its theme a timely, valid

problem, that of the veteran adjusting himself to civilian life. There can be many criticisms of the way the idea was handled and developed, but it is significant that a picture dealing with a serious motif in an entertaining and dramatic way should take most of the awards.

Gentleman's Agreement was a winner of several awards this year. Its theme was also timely and controversial. The public response has been mixed. There are those who consider anything which calls attention to anti-Semitism undesirable, who believe that it arouses feelings which might otherwise remain latent. Others think that silence on the subject has been tried and the only result has been increased tensions. The point here is that a movie was made on a subject which is generally recognized as controversial and which is the focal point of widespread prejudice.

There are numerous examples of fine movies which reached and are reaching a small audience, the discriminating few. *Henry V* comes immediately to mind. It is a great triumph and merits the praise, "the screen comes of age." And the millions in revenue it has brought into the box office has been a surprise to the industry. *Hamlet,* produced by Laurence Olivier in the same tradition, is awaited eagerly by lovers of drama, Shakespeare, and good cinema. Perhaps one of the reasons for the financial returns from *Henry V* is the manner of its presentation. The entire campaign clearly indicated that here was an unusual movie, for the intelligent, and not in the class with the "super colossal spectacle."

The documentary picture has offered promise of attracting a more mature audience as well as satisfying the regular movie patrons. It first became popular as the means of telling of espionage and other activities connected with the war. The method lends itself to subject matter heretofore difficult for the screen to handle and it creates a greater sense of realism. Unfortunately there now appears a trend to use this technique as just another way of presenting a cop-and-robber story. An exception to this pattern is *The Search,* which uses the documentary approach to show the devastating effects of war and its aftermath on the children of Europe. Another is the excellent *The Secret Land,* a color film of the last Byrd expedition to the Antarctic.

An unusually good example of the combining of serious drama and popular-appeal melodrama is found in *A Double Life*. This movie, whose leading actor received an Academy award for the role, combines large parts of *Othello* with a parallel story of love and crime to which the average audience is well-accustomed. Undoubtedly this picture introduced Shakespeare's *Othello* to audiences totally unfamiliar with the play.

Pictures featuring classical music have similarly introduced this type of music to new audiences. *A Song to Remember,* based on the life of Chopin, created a new market for Chopin recordings and compositions and sent many to libraries to learn more of his life. The success of this picture led other studios to make many movies of the same pattern. The genuine music lover and devotee is often incensed by the liberties taken in biographical details and by the fragmentary rendition of well-known and greatly loved compositions. But these shortcomings are excusable when one considers that Hollywood is reaching a larger audience than the music appreciation classes, and is gradually increasing the number who derive real pleasure from good music.

The motion picture industry has also made serious books into movies, with more success than might have been anticipated. It is remarkable that such books as *The Razor's Edge* and *The Late George Apley* should be considered screen material. The books themselves are not the usual best sellers, and could not logically be expected to attract the average movie-goer into the theatre.

Themes which are more than mere escapist entertainment are finding their way into some pictures. *The State of the Union* presented a telling political lesson while the laughs rocked the theatres. *The Treasure of Sierra Madre* was a good action movie, in addition to showing the corrosive effects on men's souls of the love of gold. *Freida* forced real thinking on the timely topic of how far freedom-loving people can afford to hate Germany and the Germans. It was a gripping story of the perplexing question of individual and group responsibility.

The so-called "Art" theatres are quite popular and well established in the North and East. They have not been tried to any

great extent in the South. Atlanta probably has the only art theatre south of Washington. And it is having quite a struggle, both to secure quantity of pictures of the type it wishes to feature and to secure the steady, dependable patronage of a sufficient number of people to make its operation profitable. The fact that theatres of the art type find it necessary to play sex pictures to lure the public is indicative of the problem of making a financial success of a policy which features film fare for select audiences. But these pictures, with their lurid ads and sensational exploitation, can drive away the very people which art theatres are dependent on for their day-in and day-out clientele.

Foreign films are a regular feature of arts theatre programs. Italian movies are creating much comment since the war. The Italians have shown a great preoccupation with the question of national guilt for their role in the war. Several outstanding pictures have been made on this general theme. They have been widely praised for their realism and unglamorous handling of war itself. In addition to these, there are many Italian pictures made from grand operas or portions from operas. These are popular with that small group who are already grand opera devotees. But the successful movie from grand opera still remains to be made, and it is an intriguing field to look forward to.

British films are becoming more available to American audiences. Many of them are fine entertainment for the discriminating. As a rule, their use of the film medium differs radically from that of Hollywood. The British use the camera as a means of showing character development rather than merely illustrating action. The best of their pictures, such as *Brief Encounter, Vacation from Marriage, Stairway to Heaven, This Happy Breed,* and others, are worth the time and money of all who appreciate subtlety and the vagaries of human nature.

The British excel in character delineation and shadings. They also do well with fantasy and certain types of detective stories. While American movies are prone to murder yarns, their approach is that of sympathy for and concentration on the criminal, the gangster, and slight variations on the "whodunnit" motif. The British

picture inclines to be centered on the detective rather than the criminal and features deductive reasoning. In the use of color there is also a marked difference between British and American films. The British use color as a kind of tinting, a shading which does not intrude or scream for attention. Hollywood seems to prefer color which "knocks your eye out."

That some pictures are designed for the literate is evidenced by production of *Mourning Becomes Electra, The Pearl, Macbeth,* and others in process at present. Such pictures will always form a very small percentage of the total output. In the nature of the case, they will never be the mainstay of the industry. But, with public support, they will remain and may even increase.

Misleading advertising makes it almost impossible for anyone to select a movie with any assurance that it will suit his particular taste. The movie ad is based on mass appeal. If the picture is feared to lack the tried and tested ingredients, the writers of the ads conceal that fact. In trying to attract the general public, they fail to attract many of those who would really enjoy the unusual film. The misleading ad is perhaps profitable in the immediate situation, but it undoubtedly has contributed to the present financial slump and to the loss of adult patronage. Considering that word-of-mouth is regarded as the best possible advertising, the misleading paid ads are often contradicted and counteracted by those who have seen the picture.

Exhibitors are afraid to book into their theatres films without big star names and which are mature in theme and treatment. Also, several very good little pictures, suitable for all the family, have not been given showings at the larger theatres downtown. *Big City,* one of the best on tolerance of racial and religious minorities, will probably never play the larger theatres. Yet it is good entertainment, has a cast of well-known players, and its message is not half as obvious as the propaganda in *Gentleman's Agreement.*

The motion picture industry is greatly beset with difficulties of many kinds. High production costs, loss of foreign markets, competition from television, and court decisions drastically altering their business practices—all make it impossible to predict the future

of films with any degree of certainty. But it is probably safe to say that, while the great number of pictures will be made for mass entertainment, there will also be pictures for the few, the select, the discriminating. Their number will depend on the support given them at the box office.

A Note on the Frontispiece

The portrait of Dr. E. Bates Block, Professor of Neurology, was presented to the Emory University Medical School by his widow, Mrs. Julia Porter Block, and their children, Julia Lowry Block and Bates Block, Jr., '40. The ceremony at which the picture was unveiled was held in the auditorium of the Emory University Hospital on the evening of February 9, 1934. The presentation address was delivered by Dr. Charles N. B. Camac, of the College of Physicians and Surgeons of Columbia University, a friend from Dr. Block's student days at Johns Hopkins, and the acceptance was made by Dean Russell H. Oppenheimer. The artist, Albert Salzbrenner, of New York, had known Dr. Block well, and although he had had no formal sittings, he achieved a lively and characteristic likeness. The flesh tones are brilliant, the comparative darkness of the lower part of the picture emphasizing the subject's hands. There is some slight monotony, however, in the regular lines of the shelves of books against which the figure is posed. The central impression of the portrait was happily expressed by Dr. Camac in his presentation address: "May I be permitted to congratulate the artist . . . who through his skill has portrayed with his brush the two outstanding qualities of his subject: poise and repose." The painting hangs in the main corridor of the Emory University Hospital.

On Nucleoproteins

By EVANGELINE PAPAGEORGE

Evangeline Papageorge, A.B. (Agnes Scott) '28, M.S. '29, Ph.D. (Michigan) '37, is Assistant Professor of Biochemistry. The following paper is a condensation of the presidential address presented at the spring banquet of the Georgia Gamma Chapter of Phi Beta Kappa on the evening of May 21, 1948.

MODERN SCIENCE has brought to light many worlds other than the one visible to the human inhabitants of the earth, which man commonly terms *the world*. The many worlds of science range in size from the island universes of the astronomer, in which our human world is but an infinitesimally small speck, down through the microscopic cosmos of the biologist to the ultra-microcosms of the molecules and atoms of the chemist and the physicist. The biochemist, concerned as he is with the composition of living matter and the intricate chemical changes which characterize the integrated dynamic processes that maintain the state called life, is vitally interested in the molecular world. For it is the ultra-microcosms of atoms and molecules that make up our cosmos.

Only about twelve to twenty-five of the ninety-two kinds of naturally occurring atoms, of which all matter on this earth consists, make up the substances ordinarily found in living matter. In fact, most biochemical molecules contain no more than half a dozen different kinds of atoms. However, when we consider the possible permutations and combinations of atomic union even with a small number of elements, and then realize further the vast possibilities of varying the pattern of arrangement of constituent groups within a molecule, we are not surprised that most molecular structures of the biochemist's world are anything but simple. And furthermore, in biologically functioning compounds, the slightest alteration in molecular structure may result in variation of physiological properties.

In living matter we find a vast array of molecular races ranging in size from pigmy tribes that are less than 100 times heavier than hydrogen, the lightest of atoms, to giants that are thousands and

even millions of times as great. This evening I beg you to go with me on a mental excursion into the biochemist's molecular world and contemplate awhile a race of giant molecules known as nucleoproteins. It cannot be an extensive trip, because the nature and habits of these macromolecules are neither well-known nor easy to understand, but perhaps even a superficial exploration will serve to show that the quest of wisdom in this molecular realm is indeed a guide in the study of life.

In the land of nucleoproteins, the soil is extremely fertile for both contemplation of past achievements and hopeful speculation on future accomplishments. In the first place, the discovery of this class of complex proteins was contemporary with the emergence of biochemistry as an independent specialty, and can serve as an example of one of many events leading to the development of a new field of specialization. In the second place, present trends in nucleoprotein research illustrate how a subject of investigation may spill over into compartment after compartment of science before progress in fundamental concepts can be made. Thus, although an ever-increasing degree of specialization is inevitable, the summation of findings to produce advances in our understanding of basic biological phenomena is accomplished only through converging endeavors in various branches of science. Plato expressed this idea over 2,000 years ago in speaking of the *scientia scientiarum:* "Now when all these studies reach the point of intercommunion and connection with one another and come to be considered in their mutual affinities, then, I think, and not till then, will the pursuit of them have a value." The truth of this statement is realized today more than ever before.

On our biochemical excursion, I shall introduce you to the nucleoproteins by first acquainting you briefly with the historical background attending their discovery. Then we can stop long enough in the land where they dwell to learn something of the nature and habitat of these macromolecules. We shall have little time for exploration, but we may view a few of the paths that promise to lead us to the solution of some of the enigmas of biology.

When Friedrich Miescher in 1868 began his studies on the chem-

istry of the cell nucleus, the field now called biochemistry was still serving its apprenticeship as the handmaiden of physiology, the science which deals with the functions of living organs and cells. In biology, the concept of the cell as the unit of organic structure in plants and in animals had been established, but the link between the study of form and that of chemical composition was not yet forged. Miescher had studied under Wilhelm His, Professor of Anatomy and Physiology at the University of Basel. Recognizing the limits of morphological approach, His influenced Miescher to apply chemical methods to the study of the cell. It was already known that in the protoplasmic organization called the cell, two structures are distinguishable: a central core, or nucleus, and a surrounding medium called protoplasm. Miescher succeeded in separating the nuclear material from the other cellular components and then isolated from the nuclear fraction a substance which he named *nuclein*. This is now called nucleoprotein and is recognized as the characteristic constituent of the cell nucleus.

The discovery of nuclein so impressed Felix Hoppe-Seyler, then Professor of Applied Chemistry at Tübingen, that he himself as well as several of his students became interested in this subject. This interest remained with Hoppe-Seyler after he went to Strasbourg in 1872 to head the first Institute of Physiological Chemistry to be founded. It was undoubtedly Hoppe-Seyler's influence which led to the brilliant work of his pupil Kossel on the components of nucleic acid. Since that day tremendous progress has been made in our knowledge of the nucleoprotein molecule.

Before we regard recent explorations in nucleoprotein study and speculate as to where they may lead us in the future, let us first stop and regard the nucleoproteins themselves to get some idea as to what manner of substances they are, since the chemical, the biological, and the physical properties of a molecule are a direct result of its chemical structure.

Nucleoproteins are classified as conjugated proteins, because they consist of a protein bound to, or conjugated with, a non-protein substance which is called the *prosthetic,* or added, group. The prosthetic group in nucleoproteins is nucleic acid. Although rather

unstable and easily split into these two parts by hydrolysis, that is reaction with water under proper catalytic influence, the nucleoproteins appear to exist as such in living cells. In studying the structure of complex giant molecules such as these, one method of approach is examination of constituent parts. Nucleoproteins have, therefore, been split into their protein and nucleic acid fractions and each of these has been submitted to further hydrolytic breakdown into simpler molecular units. Thus it has been determined that proteins and nucleic acids respectively consist of relatively simple compounds bound together to form the complex macromolecule.

What is a protein? It may be defined as a very large molecule built up of amino acids. About twenty different kinds of amino acids occur in proteins, although not all twenty are necessarily present in every protein. In fact, the simplest protein molecules, the *protamines,* may contain only eight varieties of building stones. The amino acids are all relatively simple organic compounds whose structure is understood. They have general properties in common but individual ones differ in certain specific properties, as, for example, in degree of acidity or alkalinity. The properties of a protein depend upon the properties of its constituent amino acids, upon the arrangement of these building stones within the molecule, and upon the size and shape of the molecule. No other class of substances presents a greater variety nor a greater complexity of structure than the protein, a molecule which can be synthesized only within a living cell. One of the most characteristic properties of the proteins is their biological specificity. For example, the circulating and tissue proteins of a given species of animal are characteristic of that particular species; they are similar to but not identical with the corresponding proteins in another species.

While all proteins are large molecules, they may vary greatly in size and shape. The protamines and histones are exceptionally small. The molecular weight of the protamines is said to be only around 2,000. This means that the protamine molecule is about 2,000 times as heavy as the hydrogen atom. Most proteins, however, have a molecular weight of about 17,000 or of a whole num-

ber multiple of this value. This and other evidence indicates that a number of protein units, each weighing about 17,000, may be associated together to form molecules whose relative weight runs into the hundreds of thousands and even into the millions.

Several types of proteins have been found linked with nucleic acid in nucleoproteins. These vary in amino acid composition and in size and shape. The nucleoproteins of the cell nucleus contain protamines and histones. These simpler types of protein are rich in basic amino acids, and probably combine with nucleic acid in the cell nucleus in much the same manner as ordinary bases combine with ordinary acids. Although the molecular weight of the protamines and histones is relatively small, as proteins go, many protamine or histone units may be present in a single nucleoprotein molecule.

As in the case of proteins, the nucleic acid can be split by hydrolysis ultimately into simple compounds. Each molecule of nucleic acid consists of four different kinds of nitrogenous bases, a pentose sugar (that is, a sugar with five carbon atoms), and phosphoric acid. There are two main types of nucleic acid. These differ in one of the four nitrogenous bases and in the pentose sugar. The naming of the two types of nucleic acid is based upon the sugar present. In one, the pentose is ribose; in the other, the pentose is called desoxyribose, because it has less oxygen than ribose. Thus we speak of *ribonucleic* acid and of *desoxyribonucleic* acid.

Our knowledge of the total structure of nucleic acid is not complete. In each nucleic acid there are four kinds of units called nucleotides each of which contains phosphoric acid, the same pentose but a different nitrogenous base. These four nucleotide units form a larger unit called a tetranucleotide. How many tetronucleotide units are combined in a single nucleic acid molecule is not known. Molecular weights for protein-free nucleic acids have been reported which are of the order of 1,000 to 3,000 on the one hand and of 500,000 to 3,000,000 on the other. We are uncertain as to whether the size of the prosthetic group in the nucleoprotein molecule is the same as that of the protein-free nucleic acid isolated

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in the laboratory, since chemical manipulations can and frequently do alter the structure of the material under investigation.

The proportion of nucleic acid to protein in the conjugated macromolecule varies with the source from which the nucleoprotein is isolated. The molecular weights of the nucleoproteins themselves also vary over a wide range from hundreds of thousands to millions. One nucleoprotein giant has been reported as having a molecular weight of 60,000,000.

Although the problem of determining the structure of these complex giant molecules presents almost insurmountable obstacles to the laboratory investigator, that miraculous machine, the living cell, has no difficulty in synthesizing them from simple materials. For building stones, the animal body requires phosphate and no more than ten of the twenty-odd varieties of amino acids. The plant cell can build even the amino acids from inorganic raw materials.

In earlier days of nucleic acid study, when it was thought that nucleoproteins occurred only in the cell nucleus, it was held that ribonucleic acid was characteristic of plant cells and the desoxyribonucleic type of animal tissues. It is now recognized that both types are present in all typical cells, plant and animal alike. However, the ribonucleic type is found predominantly in the cytoplasm, the cellular mass outside the nucleus, while the desoxy-type is restricted largely to the nuclear portion of the cell. The nucleic acids are more than structural components of the cell, since they appear to function also as physiological components necessary for the synthesis of proteins in both the nucleus and the cytoplasm.

There is a constantly increasing body of evidence that points to a close association between nucleic acid of the desoxyribose type and the chromosomes, the nuclear structures which carry the hereditary characteristics of the cell. In fact, it appears likely that the genes, or units of inheritance carried by the chromosomes, are giant nucleoprotein molecules or consist largely of such structures. Nucleoproteins are also present in bacteria, which are not typical cells but in which again these nucleic acid compounds function in synthetic processes. The viruses, another class of infectious agents, not only

contain nucleoprotein but some appear to be nothing more than nucleoprotein molecules! The chemical isolation of purified virus preparations has, in fact, opened up undreamed of possibilities in paths leading to the solution of biological mysteries. If for no other reason but that genes and viruses consist of nucleoproteins, future studies in this field hold promise of achievements that would have seemed utterly fantastic a few years ago. For in the genes and viruses we touch upon the borders between the world of lifeless molecules and the cosmos of living organisms.

No one has ever clearly defined the borders which separate living organisms from lifeless matter. There is probably no definite boundary. How then is the world of living organisms distinguished from that of lifeless matter? Answers to this question have concerned the philosopher as well as the scientist. Therefore, I will answer it for you by quoting from philosophical essays by two prominent contemporary biologists. J. S. Haldane, in *The Philosophical Basis of Biology,* makes the following statements: "The life of an organism is a unity which is constantly maintaining and reproducing itself. Quite evidently this conception does not exclude variation, provided that in the variation the unity of life is maintained." "Both the ordinary structure in any species of organism, and what we regard as variation in it, are active manifestations of life as a unity." The late Ralph S. Lillie, in his recent *General Biology and Philosophy of Organism,* says: "Each living organism is a unified system having a definite 'organization'; this organism maintains a definite kind of activity and reproduces itself with regularity." "The distinguishing feature of life is a complex type of material organization having constant and specific structural and chemical characters which are combined with constant metabolic activity." Lillie also makes the statement that the "uniformity of organization is based ultimately on the constancy of the physical and chemical properties possessed by the centrally placed protoplasmic aggregates, or nuclei, of the cells composing the organism."

From these statements we gather the following attributes as characteristic of life: (1) organization and integration of constituent parts; (2) constant metabolic activity for energy production

and synthesis of material required in maintenance and growth; (3) reproduction, with individual variation, or mutation. Unified organization is not, of course, a unique property of living organisms, since it is found even in the structure of atoms. However, a certain stage or degree of organization must be attained before metabolic activity and reproduction appear.

The gene has been defined by the geneticist Beadle as a unit capable of directing the synthesis of replicas of itself and of serving as a model in the formation of non-genic units of corresponding specificity. Beadle points out that it is the self-duplicability and mutability of genes which provides the material basis of biological continuity and variation. This essential unit of life is certainly associated with nucleic acid and protein if, indeed, it is not wholly nucleoprotein, but the isolation of a gene has never been achieved. However, since there are striking similarities between the genes and viruses, and since the latter have been isolated in pure form, analogies from virus study may be applied to genic structure as it affects function.

Viruses are ultra-microscopic infectious agents which are capable of passing through filters that retain ordinary bacteria. They have always been a source of mystery, because they possess certain properties characteristic of living organisms but lack other attributes typical of life. Some have regarded them as small living organisms; others have proposed the view that at least some of them may be inert molecules which divert the normal activity of a cell. The virologist Rivers has suggested that viruses form a continuum from small non-living substances to large living viruses with an intermediate group representing an unknown form of life. This continuum from single molecules to entities of living organisms has been explained by some as resulting from the manner of origin of viruses. According to this theory, viruses are simplified fragments of living protoplasm arising from living entities by a process of retrograde evolution involving loss of function and associated substance. This idea has been argued pro and con with some evidence on both sides.

Viruses range widely in size from those that are slightly smaller than some protein molecules to the largest examples of this class of infectious agents which are larger than certain living organisms. The size of the smaller viruses presents grave doubts that complicated metabolic processes such as respiration and digestion can be carried out within these structures. Although unable to reproduce or grow on artificial media, viruses reproduce or multiply within, but only within, the cells of a given host, and furthermore may change, or mutate, during reproduction. These last two properties are also characteristic of the genes. They, likewise, perpetuate themselves within, and only within, certain specific cells, and in the process of reproduction may undergo sudden changes, spontaneously or as a result of external factors, which changes are then faithfully reproduced in subsequent generations.

From 1892, when the discovery of a virus was first made, until 1930, interest in virus research centered about the discovery of new virus diseases and studies on the pathological manifestations of viruses. In 1930, Elford began investigation on the filtration of these ultra-microscopic agents through graded collodion membranes in order to determine their size. A few years later the biologist turned to chemical methods, as in Miescher's day, when Wendell Stanley at the Rockefeller Institute for Medical Research was asked to use his chemical tools to crack the mystery of the nature of viruses. Stanley's epoch-making achievement was the isolation from extracts of tobacco mosaic-diseased plants of a crystalline material which in spite of repeated purification continued to exhibit virus activity. The pure homogeneous crystalline material proved to be a nucleoprotein with a molecular weight of about 40,000,000. Workers in other laboratories were able to corroborate Stanley's work. The nucleoprotein possessed all the biological properties of the tobacco mosaic virus. Healthy plants inoculated with the pure nucleoprotein developed the mosaic disease, and from these infected plants the disease could be transmitted to other healthy plants. Thus, within the specific host cells, the nucleoprotein reproduced itself. Pure nucleoproteins obtained by Stanley from a variety

of plants infected with the same strain of the mosaic disease virus were all identical.

The purified isolated tobacco mosaic virus was submitted to extensive chemical and physico-chemical investigation. Among the most striking results was the inactivation of the virus by appropriate chemical treatment, which altered certain groups in the constituent amino acids, and subsequent reactivation by reversal of the chemical changes induced in the inactivation process. Another important finding was that the injection of the nucleoprotein into rabbits produced antibodies in the blood serum which could neutralize virus activity.

Stanley later isolated in pure form other strains of the tobacco mosaic virus. These preparations were all nucleoproteins, as had been expected. However, although they possessed similar general properties, they could nevertheless be distinguished from each other. Chemical analysis of seven distinctive nucleoproteins isolated from seven different virus strains showed definite qualitative and quantitative differences in amino acid composition. These results provided the first clue as to the nature of changes which accompany mutation, since the various strains presumably arose from tobacco mosaic virus by a process similar to that of mutation in organisms. More recently, two kinds of purified influenza virus, a more highly organized form than the tobacco mosaic disease agent, were submitted to chemical analysis. As in the case of the various strains of the tobacco mosaic virus, differences in amino acid composition were found.

One may presume that structural changes of this type are responsible for alterations of genes. Also such changes may cause the conversion of mild strains to a virulent strain, as in the case of poliomyelitis virus; or the reverse, as in the conversion of virulent yellow fever virus into a mild strain which can be used as a vaccine.

The isolation of other viruses than the tobacco mosaic agent and the influenza virus has been tried both in Stanley's laboratory and in others. Some of these, like the mosaic disease agent, were isolated in the form of crystallizable nucleoproteins. Other viruses were found to be nucleoproteins, although they have not as yet been

crystallized. Still others were isolated as large particles consisting of other organic substances in addition to nucleoprotein. Electron micrographs of purified preparations show an amazing array of shapes and sizes among the viruses. Some viruses, however, have as yet defied isolation.

The researches on viruses and genes have not led to a definite boundary between the worlds of living and non-living matter. Nor have they settled the mystery of virus activity. Stanley is not interested too greatly in the first of these problems, since he believes that there is no definite boundary between lifeless molecules and living organisms. He is, however, greatly concerned with the study of chemical structural changes, which may settle the question of the nature of virus activity and thereby give rise to implications of far greater significance. Stanley expresses the biochemist's viewpoint on these problems in the following statements: "The word 'life' is merely a definition of degree. . . . There is, therefore, a continuum from what have been called living organisms to what have been called molecules . . . both may, in fact, be regarded either as organisms or as molecules . . . they differ only in degree of organization and . . . the terms living and non-living may be applied only to entities at the two extremes. . . . With the realization that there is no definite boundary between the living and the non-living, it becomes possible to blend the atomic theory, the germ theory, and the cell theory into a unified philosophy, the essence of which is structure or architecture."

The investigation of structural changes in viruses which correspond to mutations in higher organisms does indeed present a challenge to the biochemist. If it should prove possible to cause different and reproducible changes in the chemical structure of a virus in the test tube, the way would be opened to a direct study of the exact structure necessary for virus activity. One potential accomplishment resulting from such endeavors would be the production of new virus strains, some of which may prove useful as vaccines.

The achievement in the chemical laboratory of inheritable structural changes would have implications of far-reaching significance

in other fields of science as well. Already the geneticist can stimulate mutations in simple organisms. It may soon be possible to transmute genes in predetermined ways. In fact, Pneumococcus type transformations appear to be guided in specific ways by highly polymerized nucleic acids. Beadle and others have studied derived mutant strains of the mold *Neurospora,* and have shown that specific steps in a series of chemical reactions known to occur in living organisms may be controlled by specific genes. It is not too fantastic to hope that some day it may become possible to correct certain hereditary chemical defects or abnormalities resulting from deficient genes.

Nucleoproteins and nucleic acids are certainly involved in growth. The study of growth is concerning highly diverse laboratory specialists, since cancer and other neoplastic diseases are the result of abnormality in cellular division. One of the promising theories in the field of neoplastic research is that tumorous growth is the result of somatic gene mutation. Is it too much to hope that as we come to understand the nature of normal tissue growth we may be able to check the changes that divert the normal process into the uncontrolled production of tumors?

These are some of the problems which challenge explorers in the mysterious microcosms of our world to further discoveries and make the future of nucleoprotein research bright with promise. As we turn back from molecules, viruses, and genes to our more familiar everyday cosmos, we can expect that progress in some of these problems will be astonishingly fast; in others, discouragingly slow. In our hopes to answer the challenge of the future we can but consider with Aristotle, the great philosopher-scientist of antiquity, that: "The search for truth is in one way hard and in another way easy. For it is evident that no one can master it fully nor miss it wholly. But each adds a little to our knowledge of nature, and from all the facts assembled there arises a certain grandeur."

Elegy for the STATENDAM

[*Destroyed in the bombing of Rotterdam, 1940*]

By JAMES E. WARREN, JR.

Not from the surface of the sad sea plunging,
Not through the storm and the foam,
Not with the winds' fierce lashing,
Did you go home.
But crushed against the gray wharfs fringing
The red-tiled town
And shattered in yellow flashing
Of bombs that broke
Into blunt spirals of black smoke,
You shuddered down.

The imagined brilliance of the sunless coral
Far deep and deep in dark
Was not for you. For you instead the stark
And colorless small peril
Of rust and mud. For you the strange half-death
And slow indecent burial beneath
The dull Maas water.

And yet—still glitter.
Still be within my heart as bright
As when upon one warm Southampton night
You reared above me like a jeweled city.
Still in my memory
Give your proud breast to the delighted sea.
And, scorning pity,
Churn still magnificent and fleet among
The pale waves of this song.

Carlyle, Ally and Critic of Emerson

By HELMUT KUHN

In November 1947 Professor Kuhn, of the Department of Philosophy, delivered at Emory University a series of three public lectures entitled THREE PHILOSOPHERS OF CRISIS. *The first of the series was printed in the March 1948* QUARTERLY. *The following essay is based on the second lecture.*

1.

HOW REAL is the world which we see with our eyes and touch with our hands, of which we are a part and which we embrace with the unthinking confidence of a child? On the whole, Western thought has been careful not to destroy this confidence. Yet, from its inception onward, it envisaged a truth which limits naive metaphysical trust. The assertion of transcendence—of a reality beyond the palpable but fleeting reality of our senses—is fundamental in the deeds, the imaginative creations, the philosophy and the religious devotion of the Western man. The light in which we, the children of the Hellenic-Christian civilization, live and move and have our being is not of this world. "That which is Is." With this monumental tautology, Parmenides, one of the founders of Greek philosophy, excludes the transient things around us and in us from Being proper. For a while ago they were not yet and soon they will no longer be, and what we call their being is merely a coming-into-being-and-passing-away. As the Greek philosophers proclaim Eternal Being, so the Hebrew prophets proclaim an Eternal God: "Before the mountains were brought forth or ever thou hadst formed the earth and the world, even from everlasting to everlasting, thou art God."

In modern history the otherworldly light has been waning. As a result wild hopes and fantastic fears began to disturb men's minds —their lodestar was no longer visible. Amidst the growing confusion prophetic men stood up as witnesses to the all but forgotten transcendence. Ralph Waldo Emerson and Thomas Carlyle were among their number. Both lacked a firm grip on the principles of

the disintegrating metaphysical-religious tradition, and they had to blast their trail to transcendence by hard and solitary labor. Theirs was an untutored wisdom which laid them open to many an error. Emerson erred by lack of compassion and excessive optimism, and Carlyle, on the contrary, by partiality and rashness in advocating the use of power in righting wrongs. But though their message did not always ring out clearly, it conveyed a vital truth. They continue to speak to us.

To doubt transcendence is easier in front of man-made things than in the face of nature. The origin of the former we know, whereas the latter urges upon us the problem of a creator. Emerson's and Carlyle's reassertion of transcendence came as a rebuttal of the invitation to unbelief extended to modern man by industrial civilization. Carlyle experienced at close quarters the great upheaval of the English Industrial Revolution, and under the imminence of danger he spoke with an angry voice. Emerson, son of a still agrarian New England, observed the development of what he scornfully styled "unitarian and commercial times" from the remote vantage-point of peaceful Concord and with greater composure. But his message, too, was framed as a rejoinder to the claims of the machine age.

2.

We imagine a road winding through one of the southern counties of England. It is rolling country, and this road of ours is in no hurry to cut straight across the valleys and ridges. Leisurely it meanders through the countryside, hugging the slopes as though it desired to become part of the hills. So well it succeeds in fusing with the landscape that it looks like a riverbed rather than a man-made intruder. Has it not always been here? Not always, but a long time. Many feet, many hoofs, and many wheels have marked its surface through many centuries.

As we follow this road it becomes clear that the observation which it suggests applies to everything around us. The hedgerows, the turnstiles, the mansion, and the barns, the village and its ancient church—all these are wedded to the earth and permeated by its bitter fragrance. And the earth in turn seems to take kindly to

the works of man. Once upon a time, we know, this land was wilderness, swamp and primeval forest. But the new orderly world, we feel, has arisen through an alliance between man and nature rather than through violent domination and subjection. In trimming away the savage growth man's hand seems to have been restrained by reverential care. In Plato's *Timaeus* Reason has transformed chaos into an orderly cosmos by virtue of persuasion. So also here. As a result this world seems very real and homelike, as though soothing the troubled mind in this wise: "Son of man, be of good cheer. This, indeed, is not the Garden of Eden, not God's own garden. But if in the cool of the evening you should see God walking here, be not too much surprised."

Suddenly, we imagine, the road takes a sharp turn, dipping down into a plain which seems vast because the horizon is veiled by a brown mist. We proceed, and soon the black country has closed around us, an industrial district. This is like entering a different planet, and we cannot help remembering Thomas Nashe's line, "Brightness falls from the air." This corrugated and gashed surface is the kindly earth no longer. It is earth torn open, lacerated by sharp weapons, her entrails laid bare by greedily searching hands, a battlefield rather than a homestead. The birds have ceased to sing and a stinging smell is in our nostrils. To the right and left towering elevations obstruct the view, not hills that God made but enormous heaps of rubble and dross, and in their shade long rows of barrack-like houses are almost blotted out by the sooty haze which hangs from the sky.

How very real, we thought awhile ago. But now, how phantasmic, how nightmarish, how unreal. A passage from Carlyle, expressing this unreality, comes to mind: "Alas, why go to Rome for Phantasms walking the streets? Phantasms, ghosts, in this midnight hour, hold jubilee, and screech and jabber; and the question rather were, What high reality anywhere is yet awake?" (*Past and Present,* "Phenomena"). There are parallel lines in *Sartor Resartus:* "The men and women around me, even speaking with me, were but Figures; I had practically forgotten that they were alive, that they were not merely automatic. In the midst of their crowded streets

I walked solitary. . . . To me the Universe was all void of Life, of Purpose, of Volition, even of Hostility: it was one huge, dead, immeasurable Steam-engine, rolling on, in its dead indifference, to grind me limb from limb. O, the vast gloomy, solitary Golgotha, and Mill of Death! Why was the Living banished thither companionless, conscious?" ("The Everlasting No").

The industrial landscape symbolizes the Industrial Revolution, perhaps the greatest single fact determining life in the nineteenth century. It changed the face of the earth, transformed social relations, brought into existence new millions huddling together in vast urban centers, and it created a new class, the industrial proletariat. The center of this revolution was England as Carlyle saw it. But Emerson too observed the approach of the new age from his idyllic stronghold and opposed to it his fierce individualism. In *Self-Reliance* he wrote bitterly: "Society is a great joint-stock company in which the members agree, for the better securing of his bread to each shareholder, to surrender the liberty and culture of the eater."

Never before in recorded history had man made so determined an effort towards transfiguring his environment in the service of material ends. He forged tools of stupendous ingenuity to manufacture human well-being. In his triumphant mastery over nature he was willing to transform a large portion of the habitable globe into a factory yard, if that should serve his end. But while this new world whose children we are arose with great hopes of progress and general betterment, an uneasiness began to disturb the more thoughtful and sensitive minds. They felt that amidst the hustle and the fanfares of a progressive world a great void was spreading. We move indeed, and ever more rapidly, but do we still know where we move, they asked. Today, since our physicists have supplied the tool with which to transform the moral void into a material one, and since there are governments willing to use it, it does not take exceptional sensitiveness to perceive the expanding Nothingness. Emerson and Carlyle, living at a time when optimism was at its height, proved their prophetic insight by recognizing the great omission. Borrowing their language from Christian Platonism and German Idealism, they called the forgotten Reality by

various names such as God, Spirit, the Infinite, Over-Soul, Absolute, Idea, or Life. Carlyle especially spoke with the passion though not with the powerful simplicity of an Amos.

> "We have quietly closed our eyes to the eternal Substance of things and opened them only to the Shows and Shams of things. We quietly believe this Universe to be intrinsically a great unintelligible PERHAPS; extrinsically, clear enough, it is a great Workhouse, with most extensive Kitchen-ranges, Dining-tables,—whereat he is wise who can find a place! All the truth of this Universe is uncertain; only the profit and the loss of it, the pudding and praise of it, are and remain very visible to the practical man. There is no longer any God for us. . . . Truly any Society setting out from this No-God hypothesis will arrive at a result or two. . . . It is all according to the order of Nature; and Phantasms riding with huge clatter along the streets, from end to end of our existence, astonish nobody" (*Past and Present,* "Phenomena").

3.

Mankind is sick, and in order to restore it to health the life-giving intercourse with Transcendent Reality must be renewed. This is the transcendentalist message of which both Emerson and Carlyle are the carriers. But while their goal is the same, they differ widely in the method by which the lost treasure is to be recovered. Emerson, the teacher of ascent, admonishes us to rise aloft to ever higher visions. Carlyle, advocate of the saving descent, invites us to step down into the purgatory of suffering. Let us drink the nectar and feed on the ambrosia of universal life, Emerson rejoices. Sweat, tears, and the anguish of hell for you, the candidate of a painful rebirth, retorts Carlyle.

The ascent taught by Emerson, the disciple of Plotinus, is progress in knowledge as well as an elevation of the whole mind to enthusiastic willing and feeling. Illumination and moral sentiment belong for him together. His writings sketch the itinerary of the journey upon which they are designed to start the reader.

The first station along the ascending road is reached with the vision of the world as one great living whole. The stars revolving in their orbits, the sap circulating in the roots of the trees, and the

blood pulsating in the veins of our animal bodies—they all belong together in the rhythm of life. At present we see nature suffused with the autumnal glow of receding life. But in due time this systole will be followed by diastole, the resurrection of life in springtime. That same life which slumbers in the earth brings forth corn and wine for our sustenance and inspiration. So strengthened, man sets about remoulding his terrestrial homestead in his own image and adorning himself, his body as well as his mind. He becomes a builder of houses and ships, a resourceful artisan and merchant, a lawmaker and statebuilder. But in all his labors he remains Nature's faithful son, following her hints, completing her works, inserting himself into her rhythm.

We must first liberate ourselves from the preoccupation with the things at hand, from selfish care, the fascination of the senses, and the superficiality of the measuring and weighing intellect. When by virtue of this detachment our eyes are opened to the spectacle of Nature, a fresh insight may dawn upon us and raise us to the second stage of our journey. We reflect that this great living process of nature is ruled by intelligible laws. Their true locus—this follows from their intelligibility—must be in the intelligent mind. As this is realized, the great world around us shrinks at once "into a mere illustration and fable of the mind." The mind stands revealed as prior to the massive structure of the material world. But even this breath-taking insight does not yet give final truth. We are in the forecourt and we must now dare to catch a glimpse of the adytum.

The locus of the laws determining the world is in the mind. This idealist thesis involves a great difficulty. For the mind itself may be regarded as a particular thing, and idealism seems to shatter the world into a multitude of mental monads. The mind is mine indeed, Emerson replies, or yours or someone else's. But in my own self I discover that which is greater than myself. Just as my mind embraces the world, so a universal mind encompasses my mind. This divine mind which overarches all individual minds is not a fiction of speculative thought but a potent reality. It reveals itself to the

human agent as the "thou shalt" of duty, it permeates our emotional life as "moral sentiment," and at rare moments it fills the whole soul with the unspeakable light of divine knowledge.

Through those moments of illumination human history—the history of souls—is in vitalizing contact with the life of the Over-Soul. Far from being the privilege of the man of leisure and learning, they are within the reach of everyman. Neither the busy man of affairs is debarred from them nor the toiling farmer. The experience is a gift, and nobody can force it. But everybody can prepare his mind for it. With most of us the awakening of the universal life in our individual lives lasts only for a short while, perhaps while we are young and in love or at the moment when some truth strikes home. Some elect, however, are filled to the brim by the influx of the Spirit. What is a spark in others is an illuminating and consuming fire in these few, the prophets of mankind. Everyone has the spark in him, and he alone is its responsible guardian. But prophets are needed to stir the embers in our cold hearts and to rekindle the flame of love.

4.

Carlyle did not like the idea of ascent, which seemed to him an escape from the rough and tumble of life into the airy nothing of speculation. This dislike, vehement like most of Carlyle's feelings, was a test of his friendship with Emerson. With touching awkwardness he blunted the sting of his criticism by attacking the New England Transcendentalists and their *Dial* rather than his friend directly. Emerson struck back with equal gentleness by condoning his hypochondriac ally's preoccupation with the concrete problems of his age as a concession to the man in the street. For the philosopher the fundamental problem is the same in all ages, he maintained.

This idea of a concession to the public was a misunderstanding on Emerson's part. Actually the gravitation of Carlyle's mind towards the center of disturbance in contemporary society was of the essence of his thinking. Carlyle was a man of many sorrows. Emerson, less heavily laden, was not unacquainted with the pains of bereavement and mortification either. But intellectually he shied

away from the dark side of life. Evil is devoid of reality, a mere negation, he held, and he even dared to call grief shallow. Carlyle, who had poverty and illness for his teachers, found in it all depth, and he expressed his gratitude by advocating a "worship of sorrow."

Carlyle was haunted by the experience of utter forlornness in an estranged world. But instead of isolating him, this experience revealed to him his solidarity with his fellowmen and especially with his contemporaries as his fellow sufferers. The intimate suffering of his own doubt-ridden and tortured soul he saw magnified and multiplied in the grim spectacle of society in the throes of industrial revolution. The earth torn, blackened, and desecrated by slums, the cheerless toiling of men, women, and children pressed into industrial slavery, the empty pretense and pompous verbosity of parliamentary life (of whose persisting health and vitality he, the Scotsman, had only an imperfect understanding), the heartless arrogance of the "captains of industry"—this whole world was for Carlyle the externalization of the turmoil in his own breast. Borrowing his friend's language, he might have called this age of his a "fable of the mind"—not, however, of the contemplative mind but of the mind in crisis. His triumph over his own self was for him at the same time a triumph over the demons that harassed England and the world. He longed for peace of mind, but not only for himself, and not as a meditative calm above and beyond the sweat and labor of struggling mankind. For him the yearning for rebirth through contact with Universal Life and the eagerness for social reform sprang from one and the same root. Whether the problem was how to overcome the despair of loneliness and mortality or how to promote social welfare by securing fair wages for the laborer, the goal was ultimately the same. Order was to be wrested from chaos, insanity was to be made sane, witness had to be borne through creative action to the transcendent source of all creativity.

The story of the life of Diogenes Teufelsdröckh in Carlyle's philosophical-literary confession, the *Sartor Resartus,* traces the saving descent into the purgatory of suffering. The dark ring of care, visible already during the idyll of childhood, widens as Diogenes grows up until it finally swallows all light. The father on

earth turns out not to be the true father, and science reveals the world as a dead mechanism. So doubt darkens into unbelief. "It is all a grim Desert, this once fair world of his; wherein is heard only the howling of wild beasts, or the shrieks of despairing, hate-filled men; and no Pillar of Cloud by day, and no Pillar of Fire by night, any longer guides the Pilgrim. To such length has the spirit of Inquiry carried him" ("The Everlasting No").

The promised land proves a mirage; there is nothing but the desert. With this realization the nadir is reached, the crisis is at hand, life and death are in balance. The mind, emptied though it is of all hope, is yet harrowed by a continual pining fear, and the devil whispers his Everlasting No into the sufferer's ear: "Behold, thou art fatherless, outcast, and the Universe is mine."

Now at last, under the impact of the diabolical challenge, oppressed but undefeated humanity reasserts itself: "Then my Me, in its God-created Majesty, recorded its Protest: 'I am not thine, but Free, and forever hate thee.'" The Everlasting Yea peals through the recesses of man's whole being and his eyes are opened to a new heaven and a new earth: "The Universe is not dead and demoniacal, a charnel-house with spectres, but godlike and my Father's." A long-hidden truth suddenly shines forth: the suffering to which man is heir is not a senseless affliction but the badge of his divinity. He suffers because he, the inhabitant of the earth, is not of the earth. His home is elsewhere, and his unhappiness comes from his greatness. But this transcendent vision, for which time and space are a veil hiding eternity, does not for Carlyle have the dignity of a speculative system. As a theory it is open to criticism and might again be laid low by a sceptical argument. It is significant chiefly as the theoretical expression of the individual's affirmation of his freedom. And the primary manifestation of this freedom is in man's deeds rather than in his knowledge. Carlyle wishes to replace the Socratic "Know thyself!" with what he considers a better injunction: "Know thy work!" Produce and work with all thy might. Through labor the soul is composed to harmony. "Work while it is called To-day; for the Night cometh wherein no man can work."

5.

As we listen to Emerson and Carlyle—two prophetic voices coming to us from an age that was pregnant with our own calamities—we hear them sound together harmoniously. Their cause is the same, and moreover they supply each other's want. Emerson's voice, rich and vibrant though it is, seems rather high-pitched. It lacks the bass note of tragedy. Carlyle, on the other hand, does know tragedy. Rather than becoming unfaithful to this knowledge he is willing to have his voice broken and to utter dissonant and astringent notes. Emerson proclaims the saving ascent to illumination, but he does not quite fathom the depth out of which we cry for salvation. Carlyle bids us follow the healing descent into this depth. But we may wonder whether he really leads us to a happy issue out of our troubles, or whether he is guilty of the error of those who teach the Cross and ignore the Savior. Listening to these two voices our disquietude is not truly allayed, and we strain our ears to perceive a fuller harmony in which the unearthly and jubilant melody reconciles the groan of the wounded creation.

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EDITORIAL

"State secrets" is pretty much a discredited term today. Woodrow Wilson struck a powerful blow against secrecy in international affairs by calling for "open covenants openly arrived at." The newspaper and radio keyhole reporter and commentator have brought about a fullness and immediacy of reportage making the existence of secrets of state, international or domestic, virtually impossible. Investigating committees of Congress, photographed and recorded for the newsreels, are more influential than Congress itself.

In some respects we have done well to strip from government the veil of mystery behind which masters of intrigue wielded affairs of state, often for ends contravening the public good. Something has been accomplished in the age-old problem of governing the governors. At the same time much of the authority which is the life of government has been taken from our governors. At home and abroad a political career is proving less and less attractive to young men of self-reliant abilities.

The character of statesmanship has not changed and cannot change. Statesmanship is a career demanding long training and a regular initiation. There is no short cut to the experience necessary to him who frames the public polity and administers the laws. Furthermore, while he must be responsive to the public will, he must have a will of his own based on a judgment won from experience.

In one of the last surviving ancient mysteries the entered apprentice has no place in a lodge of masters. Throughout history a sharp line of distinction has been drawn between apprentice and master. But ours is the age of the amateur. In no former time could the amateur, the novice, obtain such rich rewards for a very moderate proficiency in the arts, the crafts, and the professions. Perhaps nowhere except in the field of literature has apprenticeship been so completely dispensed with, nowhere has the amateur so completely taken over as in the field of politics. Here everyone claims to be able to do a master's work and receive a master's wages. We the

people who have arrogated to ourselves the mastery of statesmanship now suffer the penalties of our rashness. There is an old true saying that everybody's business is nobody's business. Business left in or seized upon by everybody's hands is left undone or done badly. This is history's teaching in the case of the "pure" democracy, Greece, where *demos,* the people, was characteristically in revolt against its intellectual and moral leaders and not infrequently destroyed them.

It was to avoid this weakness that the representative democracy of the United States was framed. The people secures the ends it desires not directly but through representatives. But there are limits to efficient representation. The House of Representatives has always been a weaker instrument for the transaction of public business than the Senate; this was foreseen by the founding fathers, and so experience has proved. Universal suffrage is a guarantee that the popular will shall not be ignored, but when representatives are chosen, by theory the public affairs of their constituents are entrusted to them. It may be necessary for the public weal that they go beyond the expressed will of the electorate or stop short of it. This they do at their own peril, but strong men have not shrunk from the risk. The ends attained remain as evidence of success or failure, of statecraft or mere bungling.

The American people has always been excessively legalistic. We have depended far too much upon public laws and their successive amendment to insure the public weal. We have almost equally divided our ingenuity between framing laws to curb observed or imagined abuses and devising means to circumvent the laws. All the people are to blame for this state of affairs, but when laws fail we vent our wrath upon our representatives. We decry bungling, but by constant interference, by the constant exertion of self-neutralizing pressures we make it almost impossible to remedy mistakes. At the same time we tolerate the bunglers by our inability to identify them; we punish statesmen who resist pressures and reward politicians who yield to them.

The glare of light we turn on our governors is almost as obscuring as midnight darkness. It blinds the eyes both of the observed and the observer. We so dog them with a clamor of advice, warning, and recrimination that wisdom born of quiet thought and reflection cannot mature. It may be that we have as good state servants as we deserve, but if we could bring ourselves to leave them a little alone, to allow them sometimes to withdraw into cabinet council, we and the world and times to come might be better served.

T. H. E.

Glenn Memorial at Midnight

By JOHN D. LEE

The grass is stippled with the silver light
  The moon has rained upon the earth below,
And like a lifted finger in the night
  This church's spire reflects the afterglow,
As though it sensed the meaning of its role
  Above a world of busyness and strife,
To draw attention of a people's soul
  To those high virtues of a nation's life:

The cornerstone of Peace on which it stands,
  The reach for Beauty and the thrust of Truth;
The shape of Goodness, molded by the hands
  Of them who seek to guide the steps of youth.

That men, combining these, may bring to birth
Our hopes of Heaven on a stricken Earth.

Jefferson the Virginian

A Review by THEODORE H. JACK

Dumas Malone, A.B. '10, A.M. (Yale) '21, Ph.D. (Yale) '23, Litt.D. '36, is Professor of History, Columbia University. For the last years he has served as special adviser to Emory University in connection with the development of the Graduate School, on which he prepared a widely-circulated report in 1945. Theodore H. Jack, A.B. (Alabama) '02, A.M. (Harvard) '08, Ph.D. (Chicago) '15, LL.D. '33, Professor of History, 1916-33, and Vice-President, 1929-33, of Emory University, for the past fifteen years has been President of Randolph-Macon Woman's College.

History has a way of changing with the times its estimates and interpretations of the past. There is the constant necessity, if the past is to guide us in the present, perennially to review what we call the facts, to recast them in the light of the present viewpoints, and to give new interpretations. Our generation is in process of rewriting the biographies and revaluating the services of the great leaders of our past in this nation. A case in point is the development in recent years of a new school of Lincoln scholars. The monumental work of Nicolay and Hay, the first full-length biography of the Great Emancipator, has been outmoded by the new concept we have of Lincoln and his services through the great mass of material not available to the early biographers and used by the new school of Lincoln students. Lincoln was Lincoln, but the impact of his life on ours has been materially affected by the painstaking research and publications of such men as Randall, Beveridge, and Sandburg. Emory men ought to take justifiable pride in the high place in this group held by young David Potter, of the Class of 1932, now at Yale. The South—and for that matter, the whole nation—has long gloried in the shining armor of Robert E. Lee. Douglas Freeman's monumental four volumes have given us a new view of the leader of the Lost Cause and have enhanced our appreciation of the man, his skill, his noble character. There has not yet been a really first-rate biography of the Father of our Country. But now this same Freeman, a master craftsman, has set himself to this task, and in a few weeks, with the publication of the first volume of his projected life of Washington, our generation will for the first time begin to see Washington whole.

Relative greatness is a debatable matter, but it is maintained by many that Washington, Jefferson, and Lincoln constitute the great American triumvirate, and certainly these three were among the greatest of our national heroes. For more than one hundred years, Thomas Jefferson, his life and his works, has been the subject of constant study, and in recent years the books and articles written about him would fill a small library. But despite the spate of words, there has been as yet no outstanding biography comparable to that of Lincoln or the forthcoming Washington. This need Dumas Malone, already a dis-

tinguished historian, has set out to meet.[1] Malone, a graduate of Emory in the Class of 1910, has taught history in Yale, the University of Virginia, and now, Columbia University. In addition to a number of substantial published works, he has distinguished himself in the craft through his notable editorship of the monumental *Dictionary of American Biography.*

"About twenty years ago," he writes, "I promised myself that I would write a big book about Thomas Jefferson some day. I was teaching history at the University of Virginia, which he founded, and any time that I wanted to I could look up and see Monticello in the dim distance. In the community they continued to repeat a remark of a discerning Ex-President of the United States who had once lectured there. In that place, said William Howard Taft, they still talked of Mr. Jefferson as though he were in the next room. He was there, unquestionably, whether or not any of us really understood what he was saying; and in youthful presumptuousness I flattered myself that sometime I would fully comprehend and encompass him."

Under the general title, *Jefferson and His Time,* Malone has set for himself the task of writing a comprehensive biography in four volumes. When completed, this will include *Jefferson The Virginian* (1743-1784), *Jefferson The Democrat* (1784-1801), *Jefferson The President* (1801-1809), and *Jefferson The Sage* (1809-1826). The first of these volumes, *Jefferson The Virginian,* was published in April; the second is now ready; the other two will appear in due time.

Any book from the pen of Dumas Malone will immediately command the attention of historical scholars. From a reading of this first volume, coupled with highly commendatory critical reviews by recognized authorities in the field, it is clearly manifest that Malone's youthful "presumptuousness" has materialized in a sound, scholarly, critical, thoroughly documented account of the young Jefferson during the first forty years of his life. This is the beginning of what may well prove to be the definitive life of Jefferson.

Despite the fact that, as Malone points out, the materials on Jefferson's life until he began the practice of law are scanty, the author has managed to present a lively picture of the young Jefferson as a man of flesh and blood; he contrives to give the reader a definite understanding of the background, the education, the manner of life, the intellectual interests of the young man before he became a public figure. With his entrance into public life as a member of the Virginia House of Burgesses, as a member of the County Court, and lord lieutenant, or chief officer, of his county, the material becomes much more abundant. Jefferson was one of the most prolific letter writers of his time. Then, too, he began his lifelong entries on his day-by-day activities in his Garden Book, his Account Books, and his Farm Books.

[1] *Jefferson the Virginian. Jefferson and His Time,* Volume One. By Dumas Malone. Boston, Little, Brown and Company, 1948. xxi, 484 pp. $6.00.

The author is at his best in spelling out the development of Jefferson's political and social philosophy, a philosophy which in essence dominated American thinking in the Revolutionary period. The influence of two of his teachers in Williamsburg, William Small, in general training and in the inculcation of a love of books, and George Wythe, in the philosophy of the law; the development of his ideas through contact with George Mason, author of the Virginia Declaration of Rights; the inspiration to patriotic fervor through Patrick Henry, the flaming apostle of American liberty; the sound grounding in the principles of the English law—these, as a background for his later career, are set forth in delightful fashion. "He had strongly armed his mind before critical events occurred, and was more than ready for them when they came." All of this moved naturally to the preparation of his first notable paper, printed in Williamsburg as *A Summary View of the Rights of British America.* With his election as a delegate from Virginia to the Continental Congress, Jefferson was ready for his most notable achievement, the writing of the Declaration of Independence. There is nothing really new in Malone's treatment of Jefferson's part in the Declaration, but he gives a clear, well-documented account of the background, the preparation, and the adoption of the paper.

Back in his "country," as he always called Virginia, Jefferson, now a national figure, sure of himself and of his position, strove manfully for the creation of a sound state government, for the emancipation of slaves, for education, always one of his greatest interests, for the destruction of entail, for the disestablishment of the Church, for the extension of the suffrage.

In 1779, at the early age of thirty-six, he was elected Governor by the legislature, succeeding Patrick Henry. Malone does not minimize Jefferson's recognized deficiencies as an administrator. He does not gloss over the severe criticism which came to the Governor, nor does he defend Jefferson's delays, his almost unaccountable hesitation in the closing months of his term, when English troops were overrunning the State. There was an abortive attempt in the Assembly to censure Jefferson for his conduct as Governor. Malone calls this "the nadir of the entire public career of Thomas Jefferson."

Malone has made telling use of the vast amount of material on Jefferson, much of it not previously available. He has checked his findings with the inclusive files assembled at Princeton University for the edition of the Papers of Thomas Jefferson that is being prepared under the editorship of Julian P. Boyd, and it is to be doubted that further significant material will be discovered. His style is clear, well-phrased, and very readable. The volume is enhanced by a select critical bibliography and a number of valuable appendices on Jefferson's ancestry and family and his patrimony.

To one who has spent a long life in intimate contact with young college students, it is an intriguing speculation to try to relate success in life to the

formative influences of college days, the impact of great personalities, of varying influences on the opening mind of youth on a campus. Dumas Malone once walked the old familiar paths on the campus of Emory College at Oxford. The present reviewer did not know him then. He might well wish that he had known him. Somehow it is easy to believe that a light was kindled in old Oxford a generation ago in a young man who now, a mature and well-ripened scholar, brings to his alma mater the glory of great achievement in historical knowledge.

One may well imagine that Malone's eager eyes, looking beyond the completion of his Jefferson, are already fixed on his next great venture in biography. One might hazard the guess that it will be concerned with another great figure of the Revolutionary period, perhaps Benjamin Franklin, whose mind was so much like Jefferson's.

Giant Against the Sky

A Review by EDWARD G. MACKAY

Edward G. Mackay, A.B. '10, Litt.D. (Birmingham-Southern) '25, is pastor of Glenn Memorial Church.

When Bishop Candler was midway in his great career he published a book, his second, entitled *High Living and High Lives.* Each chapter was a tribute to an eminent Southern leader delivered by him as a funeral or memorial oration. Now his biography has been published seven years after his passing, and it might well be an extended chapter of his own book.[1] It is the story of great living and of a truly "high life." It will be of perennial interest to friends and alumni of Emory University, as well as to the larger reading public.

Giant Against the Sky is the intriguing title. Those who are familiar with Bishop Candler's deep devotion to the South, which at times made him seem provincial, will smile, because the title was suggested by a line in Edwin Markham's poem on Abraham Lincoln. The poet speaks of the great cedar going down with a mighty shout among the hills and leaving "a lonesome place against the sky." But while the Bishop loved the South with a deep passion, his life story will reveal that he was a citizen of the world. His spiritual ministry reached many lands and varied peoples.

That a tree is "measured best when it is down" has become an accepted proverb in reference to the lives of great leaders. Perhaps we are still too close to the eventful life of Bishop Candler to fairly judge its impact on the

[1] *Giant Against the Sky: The Life of Bishop Warren Akin Candler.* By Alfred M. Pierce. Nashville, Abingdon-Cokesbury Press, 1948. 270 pp. $3.00.

church he served for over sixty strenuous years, or on Emory University, which can truthfully be said to be in considerable measure his lengthened shadow. Readers of this biography will agree, however, that the author, Dr. Alfred M. Pierce, has produced a book rich in historical information, intimate in its portrait of the picturesque Bishop, and characterized throughout by a judicial balance of judgment. The style is terse, the material well organized, the information thoroughly documented.

The book begins as it were at the end. There is a graphic description of the closing scenes in the more than eighty-four years of an arduous career. Silence has fallen on the Emory campus, classes are dismissed, the body lies in state in the Candler School of Theology. The scene shifts to Oxford, the funeral service in the old church, the student quartette singing "Wrestling Jacob," the Bishop's favorite hymn, and finally the interment in the Oxford cemetery.

Warren Akin Candler was born August 23, 1857, on a farm some three miles from Villa Rica, in Carroll County, Georgia. He was the tenth child in a family of eleven. His family was of substantial, vigorous, prerevolutionary stock with English, Scotch, Irish, and Italian blood mingled in the ancestral background. The first American Candler came from Ireland, descendant of an ancestor who had won distinction under Cromwell. One could wish more information about the formative years on the farm and in Villa Rica, in the schools of which small town the lad with "the little hands and big head" was prepared for Emory College, where he enrolled as a sophomore in 1873, and from which he graduated in 1875.

Bishop Candler's life falls naturally into four main aspects. He is preacher, author, church statesman, and educator. Following his graduation he enters the Methodist ministry. In eleven years he advances from circuit preacher to pastor of St. John Church, Augusta, a ranking appointment. His early preaching attracted wide attention. He spoke with deep earnestness, vigorous voice and gesture, using "scorn, ridicule, invective, irony, sarcasm." He was "inimitable, dogmatic, pugnacious, irritating, arresting, compelling, entrancing." Humor had always a conspicuous place in his pulpit and platform messages, though not in his writings.

As an author he began even while in college to write for the secular press, and through his long life a continual stream of articles, booklets, and books came from his versatile pen. He covered a wide range of subjects from serious biography to current comment on questions of the hour. Dr. Pierce estimates that all his writings if brought together would fill thirty-three volumes of three hundred pages each. For over thirty years he contributed a weekly article to the Sunday *Atlanta Journal*. It may be said that his writings were too contemporary to have an enduring place in literature, though the biographies of Coke, Galloway, and Young J. Allen will be of permanent value.

Bishop Candler stood out against the ecclesiastical sky as a church statesman

CARNEGIE LIBRARY OF ATLANTA

and missionary leader. Naturally his office as a bishop put him in the forefront of the advancing forces of his church. As an administrator he pioneered Methodist missions in Cuba, going into that field immediately after the Spanish-American war. He visited the Orient, where he brought encouragement to missionary effort in Japan and China. But it was Korea that engaged his chief interest. His leadership in Korea will always be a story of creative missionary statesmanship. Mexico also felt the touch of his strong administrative hand, and his official visit to Irish and British Methodism was an interesting episode in his life. His lifelong interest in the welfare of the Southern Negro will be remembered as long as Paine College endures. The negative side of Bishop Candler's statesmanship is reviewed in a chapter on the unification controversy which has great historical value. Bishop Candler opposed the union of American Methodism with a vigor which held back for years what seemed ultimately inevitable. But when union came he accepted it with good grace, though he did not conceal his unhappiness over it. Many of his friends thought he missed his destiny at this point, for if he had favored union it would have come a few years earlier and he would have been the senior active bishop of American Methodism. Time alone will tell whether his objections to union were well-founded.

But it is as leader in the field of Christian education that Bishop Candler's name and fame will abide through the years. Emory University as a great and growing institution will keep alive the memory of his noble services in this field. Dr. Pierce tells the story well. As president of Emory College at thirty-one and Chancellor of Emory University at fifty-seven he served Emory with the enthusiasm of youth and the poise and wisdom of maturity. He loved Emory with a great passion, and perhaps the gathering years of the future will enhance his fame. Three chapters are given over to his work at Oxford, his leadership in the Vanderbilt controversy, and the recouping of the church's loss in the founding and early direction of Emory University. He laid down the burdens of the chancellorship in 1922 leaving the University firmly established.

A brief review can not touch many phases of Bishop Candler's varied career. The chapters "The Overflow of a Full Life," "The Church and Politics," and "The Faith for Which He Fought" are important. Perhaps the best chapter in the book is "Pulpit and Pen." Emory's "Grand Old Man" retired as an active bishop in 1934. The seven years that remained were spent quietly at his home close to the Emory campus. Only in the last three or four years of his life did he show any decline in physical or mental vigor. He left detailed plans for his funeral and requested that it be held with Christian simplicity. He died on September 25, 1941. In less than two years Mrs. Candler followed him.

The Constitutions of the Americas

A Review by DAVID A. LOCKMILLER

David A. Lockmiller, B.Ph. '27, A.M. '28, LL.B. (Cumberland University) '29, Ph.D. (North Carolina) '35, LL.D. (Cumberland University) '40, is President of the University of Chattanooga. A student of Latin-American history, he is the author of MAGOON IN CUBA: A HISTORY OF THE SECOND INTERVENTION, *1906-1909 (University of North Carolina Press, 1938). The Emory University editors, Professors Gosnell, Strozier, and Stubbs, were particularly responsible for the South American constitutions in the volume reviewed, the task of translation having been entrusted to Professor Strozier, of the Department of Romance Languages.*

Students of political science, constitutional law, and American history (including that of the twenty republics of Hispanic America and the Dominion of Canada) will find this collection of constitutions[1] an invaluable source book. Diplomats, journalists, international lawyers, and individuals and corporations having commercial relations with the countries of the Western Hemisphere will likewise find it to be an indispensable reference volume.

The editors present for the first time complete translations in English of all the current constitutions of the Americas. The individual texts, carefully translated from Spanish, French, and Portuguese, are preceded by brief essays which discuss the constitutional development of each state, and the whole is introduced by a fine synthesis of constitutional development in Latin America. The only omission, and this is perhaps outside the scope of the work since the areas in question are not sovereign, concerns the organic laws of the Guianas, British Honduras, and American islands under the jurisdiction of European countries.

Excepting the British North American Act and the Constitution of the United States, the constitutions presented show a predominant Spanish influence. French features are discernible, particularly in Haiti, and Brazil bears the imprint of Portugal. As in the United States and Canada, the forces of centralization and decentralization have struggled for supremacy, and generally the centralists have prevailed.

Many of the constitutions contain statutory provisions and features strange to citizens of the United States. Among the latter may be mentioned state religions, councils of state, the suspension of constitutional guarantees, Indian communities, modified parliamentary government, restrictive and unique qualifications for chief executives, prohibitions against the alienation of national territory, the family and culture, and the concept that private property imposes social obligations. Several countries cling to conservative constitutions while others have shown a willingness to experiment with their governmental ma-

[1] *The Constitutions of the Americas.* Edited by Russell H. Fitzgibbon, Cullen B. Gosnell, William A. Strozier, & William B. Stubbs. Chicago, The University of Chicago Press, 1948. xx, 847 pp. $10.00.

chinery. Fourteen Latin-American constitutions, although preserving many old principles and provisions, have been adopted *de novo* since 1932.

These constitutions, beautiful in phraseology and strong on guarantees, prove that words and lofty sentiments alone do not produce political stability or good government. Nature and history are too often ignored by constitution makers; and in Latin America as a whole the record of revolutions, dictatorships, and coups d'état clearly indicates that inexperienced politicians too often attempted the "impossible feat of leaping from political medievalism to modern democracy."

Recognizing the constitutions as legal documents, the translations are as literal as is consistent with clarity. Footnotes have been reduced to a minimum. The selective bibliography is limited to books and articles in English. One of the most valuable features of the work is the twenty-two-page index which refers to terms and provisions of the several constitutions under individual subject headings.

Although a source book, the casual reader will be fascinated by the similarities and differences between these basic charters and his own. The work represents a tremendous amount of research, linguistic ability, and a sympathetic understanding of peoples striving, at times against great odds, to make democracy work. The Editor-in-Chief, Associate Editors, and the University of Chicago Press are to be congratulated on making this important and useful volume available to the public.

Sea Islands of Georgia

A Review by ARTHUR T. ALLEN

Arthur T. Allen, A.B. '39, M.S. (Tennessee) '47, is Assistant Professor of Geology.

Count D. Gibson, a native Georgian, after graduating from Emory College began his teaching career at Covington High School. From there he moved on to Emory-at-Oxford and then to Georgia Tech, where he served seventeen years as head of the Department of Geology until his retirement in 1942.

His ability as a teacher, combined with the skill to choose his illustrations from everyday life, enabled him to make his subject easy and clear to the interested and the uninterested alike. Thousands of Georgia Tech students who came in contact with him were inspired by his guidance and friendship.

The purpose of the book[1] is outlined in the Preface as follows: "It interprets the geology of the islands and being intended for the layman primarily is written in a freedom not permitted in strictly scientific circles: most matters

[1] *Sea Islands of Georgia.* By Count D. Gibson. Athens, University of Georgia Press, 1948. 73 pp. $2.00.

are treated categorically, the vocabulary is as free as possible from scientific terms, and figures are given in the nearest round terms."

The text is presented in a well-organized, logical manner and makes for delightful reading. Basic definitions and descriptions are used, wherever necessary, to add to the clarity of the general subject.

The early part of the book is devoted to the discussion of tides, winds, and artesian wells, particularly as they occur in South Georgia and the Sea Islands. These phenomena are described in simple terminology and with well-prepared diagrams.

The General Geology of Georgia is reviewed from the standpoint of the variety of geological features, mineral resources, average elevation, annual rainfall, physiographic provinces, and major structural features.

Under the heading of General Geology of Georgia's Sea Islands such facts as their names, locations, sizes, and individual characteristics are described. Outstanding theories advanced for the origin of the islands are included, as well as a detailed discussion of their geological history.

In the chapter dealing with the birth of the Georgia islands, all islands are classified as to modes of origin. The birth of the Sea Islands is presented in the light of cause and effect, together with evidence pointing to these conclusions.

Modifications of Georgia's Sea Islands are constantly taking place, and there seems to be no loss but rather a gain in growth. Nevertheless, the sea level is rising faster than their growth. The closing chapter relates the effect of tides, winds, and currents to the changes taking place in the islands at the present time. It is interesting to note the manner in which the author relates all geological phenomena to a unit. Although the origin of the Sea Islands has been a subject of discussion among geologists for some years, Gibson deals with the subject admirably.

The text is clarified by eighteen drawings, and there is an outline map of the Georgia coast in the end papers.

1848-1948

JOEL CHANDLER HARRIS